```
=> fil reg; d ide l2; d ide l3
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DICTIONARY FILE UPDATES:  30 JUL 2008  HIGHEST RN 1037244-07-7

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L2   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2008 ACS on STN
RN   13981-52-7  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   Polonium, isotope of mass 210  (CA INDEX NAME)
OTHER NAMES:
CN   210Po
CN   Po 210
CN   Polonium-210
CN   Radium F
DR   14809-83-7
MF   Po
CI   COM
LC   STN Files:   AGRICOLA, ANABSTR, BIOSIS, BIOTECHNO, CA, CAOLD, CAPLUS,
       CHEMLIST, CIN, CSNB, EMBASE, HSDB*, IFICDB, IFIPAT, IFIUDB, MEDLINE,
       MSDS-OHS, PIRA, PROMT, TOXCENTER, USPAT2, USPATFULL, USPATOLD
         (*File contains numerically searchable property data)


 210Po



**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

            3023 REFERENCES IN FILE CA (1907 TO DATE)
               3 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
            3024 REFERENCES IN FILE CAPLUS (1907 TO DATE)
              42 REFERENCES IN FILE CAOLD (PRIOR TO 1967)
```

L3 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
RN 14255-04-0 REGISTRY
ED Entered STN: 16 Nov 1984
CN Lead, isotope of mass 210 (CA INDEX NAME)
OTHER NAMES:
CN 210Pb
CN Lead-210
CN Pb 210
CN Radium D
MF Pb
LC STN Files: AGRICOLA, ANABSTR, BIOSIS, BIOTECHNO, CA, CAOLD, CAPLUS, CHEMLIST, CIN, CSNB, EMBASE, IFICDB, IFIPAT, IFIUDB, PROMT, TOXCENTER, USPAT2, USPATFULL, USPATOLD

^{210}Pb

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

4375 REFERENCES IN FILE CA (1907 TO DATE)
10 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
4376 REFERENCES IN FILE CAPLUS (1907 TO DATE)
21 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> => fil capl; d que l9; d que l16; d que l25; d que l26; d que l32; d que l35
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FILE COVERS 1907 - 31 Jul 2008 VOL 149 ISS 5
FILE LAST UPDATED: 30 Jul 2008 (20080730/ED)

Caplus now includes complete International Patent Classification (IPC) reclassification data for the second quarter of 2008.

Effective October 17, 2005, revised CAS Information Use Policies apply. They are available for your review at:

http://www.cas.org/legal/infopolicy.html
'OBI' IS DEFAULT SEARCH FIELD FOR 'CAPLUS' FILE

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L2            1 SEA FILE=REGISTRY ABB=ON  13981-52-7
L3            1 SEA FILE=REGISTRY ABB=ON  14255-04-0
L4         3024 SEA FILE=CAPLUS ABB=ON  L2
L5         4376 SEA FILE=CAPLUS ABB=ON  L3
L6         1219 SEA FILE=CAPLUS ABB=ON  L4 AND L5
L8         2364 SEA FILE=CAPLUS ABB=ON  RADIATION SOURCES/CT
L9            4 SEA FILE=CAPLUS ABB=ON  L6 AND L8



L2            1 SEA FILE=REGISTRY ABB=ON  13981-52-7
L3            1 SEA FILE=REGISTRY ABB=ON  14255-04-0
L4         3024 SEA FILE=CAPLUS ABB=ON  L2
L5         4376 SEA FILE=CAPLUS ABB=ON  L3
L6         1219 SEA FILE=CAPLUS ABB=ON  L4 AND L5
L7           28 SEA FILE=CAPLUS ABB=ON  L2/P AND L3/P
L10      903425 SEA FILE=CAPLUS ABB=ON  A/OBI
L12        6038 SEA FILE=CAPLUS ABB=ON  L10(L)(SOURCE#/OBI OR EMIT?/OBI)
L13          28 SEA FILE=CAPLUS ABB=ON  L12 AND L6
L15      258343 SEA FILE=CAPLUS ABB=ON  SEAL?/BI
L16           2 SEA FILE=CAPLUS ABB=ON  (L13 OR L7) AND L15



L2            1 SEA FILE=REGISTRY ABB=ON  13981-52-7
L3            1 SEA FILE=REGISTRY ABB=ON  14255-04-0
L7           28 SEA FILE=CAPLUS ABB=ON  L2/P AND L3/P
L20         248 SEA FILE=REGISTRY ABB=ON  RADON?/CN
L21       25986 SEA FILE=CAPLUS ABB=ON  L20
L25           6 SEA FILE=CAPLUS ABB=ON  L7 AND L21



L2            1 SEA FILE=REGISTRY ABB=ON  13981-52-7
L3            1 SEA FILE=REGISTRY ABB=ON  14255-04-0
L4         3024 SEA FILE=CAPLUS ABB=ON  L2
L5         4376 SEA FILE=CAPLUS ABB=ON  L3
L6         1219 SEA FILE=CAPLUS ABB=ON  L4 AND L5
L10      903425 SEA FILE=CAPLUS ABB=ON  A/OBI
L12        6038 SEA FILE=CAPLUS ABB=ON  L10(L)(SOURCE#/OBI OR EMIT?/OBI)
L13          28 SEA FILE=CAPLUS ABB=ON  L12 AND L6
L20         248 SEA FILE=REGISTRY ABB=ON  RADON?/CN
L21       25986 SEA FILE=CAPLUS ABB=ON  L20
L24      584884 SEA FILE=CAPLUS ABB=ON  71/SC,SX =NUCLEAR TECHNOLOGY
L26           4 SEA FILE=CAPLUS ABB=ON  L13 AND L21 AND L24



L2            1 SEA FILE=REGISTRY ABB=ON  13981-52-7
L3            1 SEA FILE=REGISTRY ABB=ON  14255-04-0
L4         3024 SEA FILE=CAPLUS ABB=ON  L2
L5         4376 SEA FILE=CAPLUS ABB=ON  L3
L6         1219 SEA FILE=CAPLUS ABB=ON  L4 AND L5
L7           28 SEA FILE=CAPLUS ABB=ON  L2/P AND L3/P
L10      903425 SEA FILE=CAPLUS ABB=ON  A/OBI
L12        6038 SEA FILE=CAPLUS ABB=ON  L10(L)(SOURCE#/OBI OR EMIT?/OBI)
L13          28 SEA FILE=CAPLUS ABB=ON  L12 AND L6
L18       76855 SEA FILE=CAPLUS ABB=ON  POLYCARBONATE#/BI
L19      353488 SEA FILE=CAPLUS ABB=ON  HYDROXIDE#/BI
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L31     1420531 SEA FILE=CAPLUS ABB=ON  FILM#/BI
L32           4 SEA FILE=CAPLUS ABB=ON  (L13 OR L7) AND (L18 OR L19 OR L31)



L2            1 SEA FILE=REGISTRY ABB=ON  13981-52-7
L3            1 SEA FILE=REGISTRY ABB=ON  14255-04-0
L4         3024 SEA FILE=CAPLUS ABB=ON  L2
L5         4376 SEA FILE=CAPLUS ABB=ON  L3
L33           5 SEA FILE=CAPLUS ABB=ON  L4(L)PUR/RL
L34           5 SEA FILE=CAPLUS ABB=ON  L5(L)PUR/RL
L35           2 SEA FILE=CAPLUS ABB=ON  L33 AND L34


=> s l9,l16,l25,l26,l32,l35

L82          14 (L9 OR L16 OR L25 OR L26 OR L32 OR L35)

=> fil wpix; d que l81

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MOST RECENT THOMSON SCIENTIFIC UPDATE:     200848      <200848/DW>
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    20071130/UPIC and 20080401/UPIC.
    ECLA reclassifications to April and US national classifications to
    the end of January 2008 have also been loaded. Update dates
    20080401/UPEC and /UPNC have been assigned to these. <<<

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'BI ABEX' IS DEFAULT SEARCH FIELD FOR 'WPIX' FILE


L70          68 SEA FILE=WPIX ABB=ON  (POLONIUM/BI,ABEX OR PO/BI,ABEX)(A)210/BI
                ,ABEX OR 210PO/BI,ABEX OR PO210/BI,ABEX OR POLONIUM210/BI,ABEX
                OR 210POLONIUM/BI,ABEX
L71          68 SEA FILE=WPIX ABB=ON  (LEAD/BI,ABEX OR PB/BI,ABEX)(A)210/BI,ABE
                X OR 210PB/BI,ABEX OR PB210/BI,ABEX OR 210LEAD/BI,ABEX OR
                LEAD210/BI,ABEX
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```
L73      974355 SEA FILE=WPIX ABB=ON  FILM#/BI,ABEX
L75       66573 SEA FILE=WPIX ABB=ON  POLYCARBONATE#/BI,ABEX OR POLY CARBONATE#
                /BI,ABEX
L76      146392 SEA FILE=WPIX ABB=ON  HYDROXIDE#/BI,ABEX
L77      722352 SEA FILE=WPIX ABB=ON  SEAL?/BI,ABEX
L78        1259 SEA FILE=WPIX ABB=ON  RANDOM PULS?/BI,ABEX
L80        2652 SEA FILE=WPIX ABB=ON  ALPHA/BI,ABEX(2A)(SOURCE/BI,ABEX OR
                EMIT?/BI,ABEX OR PARTICLE#/BI,ABEX)
L81           4 SEA FILE=WPIX ABB=ON  L70 AND L71 AND (L73 OR L75 OR L76 OR
                L77 OR L78 OR L80)


=> fil PASCAL, BIOSIS, GEOREF, ENERGY, DISSABS, CONFSCI, INSPEC, EMBASE, COMPENDEX,
SCISEARCH

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=> d que l49; d que l54; d que l56; d que l57; d que l63; d que l68

L37        7713 SEA (POLONIUM OR PO)(A) 210 OR 210PO OR PO210
L38       17263 SEA (LEAD OR PB)(A) 210 OR 210PB OR PB210
L42       47252 SEA POLYCARBONATE# OR POLY CARBONATE#
L49           2 SEA L37 AND L38 AND L42
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L37        7713 SEA (POLONIUM OR PO)(A) 210 OR 210PO OR PO210
L38       17263 SEA (LEAD OR PB)(A) 210 OR 210PB OR PB210
L39     2217612 SEA FILM#
L40       68820 SEA RADON OR 222RADON OR RADON222
L41       98370 SEA ALPHA(2A)(SOURCE OR EMIT? OR PARTICLE#)
L43      190082 SEA HYDROXIDE#
L44      226644 SEA SEAL?
L54           9 SEA L37 AND L38 AND L39 AND ((L40 OR L41 OR L43 OR L44))



L37        7713 SEA (POLONIUM OR PO)(A) 210 OR 210PO OR PO210
L38       17263 SEA (LEAD OR PB)(A) 210 OR 210PB OR PB210
L40       68820 SEA RADON OR 222RADON OR RADON222
L41       98370 SEA ALPHA(2A)(SOURCE OR EMIT? OR PARTICLE#)
L43      190082 SEA HYDROXIDE#
L44      226644 SEA SEAL?
L56           6 SEA L37 AND L38 AND L43 AND ((L40 OR L41 OR L44))



L37        7713 SEA (POLONIUM OR PO)(A) 210 OR 210PO OR PO210
L38       17263 SEA (LEAD OR PB)(A) 210 OR 210PB OR PB210
L40       68820 SEA RADON OR 222RADON OR RADON222
L41       98370 SEA ALPHA(2A)(SOURCE OR EMIT? OR PARTICLE#)
L44      226644 SEA SEAL?
L57           4 SEA L37 AND L38 AND L44 AND ((L40 OR L41))



L37        7713 SEA (POLONIUM OR PO)(A) 210 OR 210PO OR PO210
L38       17263 SEA (LEAD OR PB)(A) 210 OR 210PB OR PB210
L40       68820 SEA RADON OR 222RADON OR RADON222
L58        2389 SEA L37(2A) L38
L61         907 SEA L40(5A) COLLECT?
L63           1 SEA L58 AND L61



L37        7713 SEA (POLONIUM OR PO)(A) 210 OR 210PO OR PO210
L38       17263 SEA (LEAD OR PB)(A) 210 OR 210PB OR PB210
L40       68820 SEA RADON OR 222RADON OR RADON222
L41       98370 SEA ALPHA(2A)(SOURCE OR EMIT? OR PARTICLE#)
L58        2389 SEA L37(2A) L38
L66        1616 SEA RANDOM PULS?
L68           5 SEA L58 AND (L40 OR L41) AND L66


=> s l49,l54,l56,l57,l63,l68

L83          23 (L49 OR L54 OR L56 OR L57 OR L63 OR L68)

=> dup rem l82,l81,l83

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FILE 'ENERGY' ENTERED AT 14:09:22 ON 31 JUL 2008

FILE 'INSPEC' ENTERED AT 14:09:22 ON 31 JUL 2008
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FILE 'EMBASE' ENTERED AT 14:09:22 ON 31 JUL 2008

FILE 'COMPENDEX' ENTERED AT 14:09:22 ON 31 JUL 2008

FILE 'SCISEARCH' ENTERED AT 14:09:22 ON 31 JUL 2008

PROCESSING COMPLETED FOR L82
PROCESSING COMPLETED FOR L81
PROCESSING COMPLETED FOR L83
L84 31 DUP REM L82 L81 L83 (10 DUPLICATES REMOVED)
ANSWERS '1-14' FROM FILE CAPLUS
ANSWERS '15-16' FROM FILE WPIX
ANSWERS '17-20' FROM FILE BIOSIS
ANSWERS '21-28' FROM FILE ENERGY
ANSWER '29' FROM FILE EMBASE
ANSWER '30' FROM FILE COMPENDEX
ANSWER '31' FROM FILE SCISEARCH

=> d ibib ab hitind 1-14; d iall abex tech 15-16; d iall 17-31; fil hom

L84 ANSWER 1 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2004:1156703 CAPLUS Full-text
DOCUMENT NUMBER: 142:44783
TITLE: Method for producing a sealed 210Pb-210Po alpha source (alpha particle emitter) and apparatus thereof
INVENTOR(S): Mitsugashira, Hiroaki; Tsuyuzaki, Noriyoshi
PATENT ASSIGNEE(S): Japan
SOURCE: PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004114324	A2	20041229	WO 2004-JP8407	20040609
WO 2004114324	A3	20050224		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,

TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

JP 2005010009	A	20050113	JP 2003-174296		20030619
EP 1634302	A2	20060315	EP 2004-736467		20040609
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK					
CN 1826663	A	20060830	CN 2004-80017060		20040609
US 20070098606	A1	20070503	US 2005-560922		20051215
PRIORITY APPLN. INFO.:			JP 2003-174296	A	20030619
			WO 2004-JP8407	W	20040609

AB A method is described for producing a sealed 210Pb-210Po α source for a random pulse generator. The method includes: collecting 210Pb-210Po with a 210Pb collector using Rn collection; precipitating the hydroxides of the collected 210Pb-210Po and collecting the ppts. by a polycarbonate filter; dissolving the 210Pb-210Po hydroxide precipitate to form a 210Pb-210Po radioactive thin film ; and sealing the 210Pb-210Po radioactive thin film for protection.

IC ICM G21G004-00
CC 71-6 (Nuclear Technology)
ST radiation source lead polonium radon alpha particle emitter
IT Radiation sources
(method for producing a sealed 210Pb-210Po alpha source)
IT Polycarbonates, uses
Uranium ores
RL: NUU (Other use, unclassified); USES (Uses)
(method for producing a sealed 210Pb-210Po alpha source)
IT 13981-52-7P, Polonium-210, preparation 14255-04-0P, Lead-210, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(method for producing a sealed 210Pb-210Po alpha source)
IT 14859-67-7, Radon-222, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(method for producing a sealed 210Pb-210Po alpha source)

L84 ANSWER 2 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 2
ACCESSION NUMBER: 2003:91799 CAPLUS Full-text
DOCUMENT NUMBER: 138:261770
TITLE: Collection of emanating 222Rn for the preparation of a 210Pb-210Po alpha-source and the building of a mobile random pulse and probability generator utilizing alpha-counting technique
AUTHOR(S): Hirose, N.; Tsuyuzaki, N.; Yamamot, H.; Mitsugashira, T.; Hara, M.
CORPORATE SOURCE: IWAKI Electronics Co., Ltd., Iwaki-city, Fukushima, 972-8322, Japan
SOURCE: Journal of Radioanalytical and Nuclear Chemistry (2003), 255(1), 207-210
CODEN: JRNCDM; ISSN: 0236-5731
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A random pulse and probability generator (RPG) was developed using the detection technique of alpha-particles as the random signal source. The collection technique for 222Rn emanated from natural U ore was examined for preparing highly pure 210Pb-210Po as an alpha source for RPG. The yield with a trap refrigerated by liquid N is >99% for 222Rn collection.
CC 71-7 (Nuclear Technology)
ST alpha source probability generator
IT Distribution function
(Poisson; in relation to alpha-source for random pulse and probability generator)
IT Probability
(emanating 222Rn in preparation of 210Pb-210Po alpha-source for random pulse and probability generator)
IT 12587-46-1, Alpha particle
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(decay detector; alpha-source for random pulse and probability generator)
IT 14859-67-7, Radon-222, uses
RL: NUU (Other use, unclassified); USES (Uses)
(emanating 222Rn in preparation of 210Pb-210Po alpha-source for random pulse and probability generator)
IT 13981-52-7, Polonium-210, processes 14255-04-0, Lead-210, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(emanating 222Rn in preparation of 210Pb-210Po alpha-source for random pulse and probability generator)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 3 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 3
ACCESSION NUMBER: 2000:551944 CAPLUS Full-text
DOCUMENT NUMBER: 133:156747
TITLE: Radiation sources for examination and/or calibration of radiation detectors
INVENTOR(S): Von Philipsborn, Henning
PATENT ASSIGNEE(S): Germany
SOURCE: Ger. Offen., 8 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10002113	A1	20000810	DE 2000-10002113	20000119
PRIORITY APPLN. INFO.:			DE 1999-19902145 A1	19990120

AB A source for calibration comprises a radioelement-enriched carrier substrate. The radionuclide may be Pb-210 and/or Po-210. 1St a Rn-222-free substance is brought into a gas volume and then the Rn-222 concentration in the volume is increased. Then the gas contained in the volume is introduced into an organic solvent, whereby the Rn-222 contained in the gas dissolves in the solvent. The solvent is then aged over several days and poured over the carrier substrate through a screen end glass-fiber filter. Alternatively the carrier substrate can be also temporarily stored in the solvent. The process is low-cost and safe.
IC ICM G21G004-04
ICS G01T001-16

CC 71-6 (Nuclear Technology)
IT Calibration
Radiation detectors
Radiation sources
(radiation sources for examination and/or calibration of radiation detectors)
IT 13981-52-7, Polonium-210, processes 14255-04-0, Lead-210, processes 14859-67-7, Radon-222, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(radiation sources for examination and/or calibration of radiation detectors)

L84 ANSWER 4 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:71900 CAPLUS Full-text
DOCUMENT NUMBER: 147:352120
TITLE: Estimate computing on source of nuclear and radiological terrorism events
AUTHOR(S): Fu, Guang-zhi; Liu, Jun-feng; He, Bin; Zhang, Xi-xi
CORPORATE SOURCE: The Second Artillery Engineering Institute, Xian of Shaanxi Prov., 710025, Peop. Rep. China
SOURCE: He Dianzixue Yu Tance Jishu (2006), 26(6), 723-725, 716
CODEN: HDYUEC; ISSN: 0258-0934
PUBLISHER: Yuanzineng Chubanshe
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB Once the nuclear and radiol. terrorism events have happened, and we do not know the nuclear kinds and amts., it should be very difficult for us to make a reasonable appraisement about the events, at the same time it might affect the protective and active, decision-making about meeting the emergency. One source anal. method was presented in this paper, and this method was used to explain an example of the source about the nuclear and radiol. events. This paper also pointed out that the mainly radiol. dangerous in the nuclear and radiol. terrorism events was long-lived α aerosol, and the mainly chemical dangerous was the very poisonous nuclide.
CC 71-14 (Nuclear Technology)
ST source nuclear radiol terrorism event alpha aerosol nuclide
IT 7440-69-9, Bismuth (209), formation (nonpreparative) 13966-01-3, Thallium (210), formation (nonpreparative) 13966-27-3, Lead (206), formation (nonpreparative) 13966-29-5, Uranium (234), formation (nonpreparative) 13968-55-3, Uranium (233), formation (nonpreparative) 13981-14-1, Protactinium (233), formation (nonpreparative) 13981-52-7, Polonium (210), formation (nonpreparative) 13981-53-8, Radium (225), formation (nonpreparative) 13982-10-0, Plutonium (242), formation (nonpreparative) 13982-63-3, Radium (226), formation (nonpreparative) 13994-20-2, Neptunium (237), formation (nonpreparative) 14119-29-0, Lead (207), formation (nonpreparative) 14119-30-3, Lead (209), formation (nonpreparative) 14119-32-5, Plutonium (241), formation (nonpreparative) 14119-33-6, Plutonium (240), formation (nonpreparative) 14133-67-6, Thallium (207), formation (nonpreparative) 14255-04-0, Lead (210), formation (nonpreparative) 14265-85-1, Actinium (225), formation (nonpreparative) 14269-63-7, Thorium (230), formation (nonpreparative) 14331-79-4, Bismuth (210), formation (nonpreparative) 14331-85-2, Protactinium (231), formation (nonpreparative) 14596-10-2, Americium (241), formation (nonpreparative) 14733-03-0, Bismuth (214), formation (nonpreparative) 14835-02-0, Radon (219), formation (nonpreparative) 14859-67-7, Radon (222), formation (nonpreparative) 14932-40-2, Thorium (231), formation (nonpreparative) 15035-09-3, Thallium (206), formation (nonpreparative)

15065-10-8, Thorium (234), formation (nonpreparative) 15067-28-4, Lead (214), formation (nonpreparative) 15100-28-4, Protactinium (234), formation (nonpreparative) 15117-48-3, Plutonium (239), formation (nonpreparative) 15117-96-1, Uranium (235), formation (nonpreparative) 15229-37-5, Bismuth (211), formation (nonpreparative) 15422-74-9, Polonium (218), formation (nonpreparative) 15594-54-4, Thorium (229), formation (nonpreparative) 15623-45-7, Radium (223), formation (nonpreparative) 15623-47-9, Thorium (227), formation (nonpreparative) 15690-73-0, Thallium (209), formation (nonpreparative) 15706-52-2, Polonium (215), formation (nonpreparative) 15735-67-8, Polonium (214), formation (nonpreparative) 15735-83-8, Polonium (211), formation (nonpreparative) 15755-40-5, Astatine (218), formation (nonpreparative) 15756-41-9, Francium (221), formation (nonpreparative) 15756-57-7, Polonium (213), formation (nonpreparative) 15756-98-6, Francium (223), formation (nonpreparative) 15776-20-2, Bismuth (213), formation (nonpreparative) 15816-77-0, Lead (211), formation (nonpreparative) 17239-90-6, Astatine (217), formation (nonpreparative) 51696-22-1, Actinium (237), formation (nonpreparative) 51696-49-2, Thorium (237), formation (nonpreparative)
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
(estimate computing on source of nuclear and radiol. terrorism events)

L84 ANSWER 5 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2006:256884 CAPLUS Full-text
DOCUMENT NUMBER: 144:365398
TITLE: Performance characteristics of sequential separation and quantification of lead-210 and polonium-210 by ion exchange chromatography and nuclear spectrometric measurements
AUTHOR(S): El Afifi, E. M.; Borai, E. H.
CORPORATE SOURCE: Hot Laboratories and Waste Management Center (HLWMC), Atomic Energy Authority, Cairo, Egypt
SOURCE: Journal of Environmental Quality (2006), 35(2), 568-574
CODEN: JEVQAA; ISSN: 0047-2425
PUBLISHER: American Society of Agronomy
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A selective separation and quant. determination procedure for 210Pb and 210Po in various environmental matrixes from different sources such as IAEA-326 soil, phosphate rocks (PR), and phosphogypsum (PG) was developed. The tested samples were digested sequentially using concentrated mineral acids (HF, HNO3) by a programmable high-pressure microwave digestion system. The sample solution was loaded onto a preconditioned ion exchange column (Sr-resin) for chromatog. separation Polonium-210 was eluted by 6 M HNO3 then spontaneously deposited onto polished silver disks to be measured using low-background alpha spectrometry. Lead-210 was sequentially eluted using 6 M HCl solution, precipitated as lead oxalate, dissolved in HNO3 solution, and mixed with scintillation cocktail to be measured by liquid scintillation counting (LSC). Performance of the developed procedure was tested using a reference soil (IAEA-326), with recommended isotope values, that was used as a quality control to assess separation and quantification efficiency (recovery %). The min. detectable activities of 210Pb and 210Po were found to be 24 and 0.28 Bq kg-1 for the measurements using LSC and alpha spectrometry, resp. The recoveries (%) of 210Pb and 210Po were found to be 80 and 60%, resp. To test the validity of the proposed LSC method, a comparative study was performed by measuring 210Pb activity concentration in test samples by nondestructive gamma-ray spectrometry.
CC 8-1 (Radiation Biochemistry)

Section cross-reference(s): 19
IT 13981-52-7P, Polonium-210, analysis 14255-04-0P, Lead-210, analysis
RL: ANT (Analyte); PUR (Purification or recovery); ANST (Analytical study); PREP (Preparation)
(sequential separation and quantification of lead-210 and polonium-210 by ion exchange chromatog. and nuclear spectrometric measurements)
REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 6 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:535419 CAPLUS Full-text
DOCUMENT NUMBER: 139:313232
TITLE: Gamma coincidence study of 208Pb+350 MeV 64Ni collisions
AUTHOR(S): Krolas, W.; Broda, R.; Fornal, B.; Pawlat, T.; Grawe, H.; Maier, K. H.; Schramm, M.; Schubart, R.
CORPORATE SOURCE: H. Niewodniczanski Institute of Nuclear Physics, Krakow, PL-31342, Pol.
SOURCE: Nuclear Physics A (2003), A724(3,4), 289-312
CODEN: NUPABL; ISSN: 0375-9474
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Products of 208Pb + 64Ni collisions at an energy 12% above the Coulomb barrier were studied in a γ-spectroscopy thick target experiment The product yield distribution was established from the γ-γ coincidence anal. supplemented by target radioactivity measurements. Neutron evaporation from excited primary products was estimated to determine the pre-emission map of fragments. We discuss the transfer of protons and neutrons between the colliding ions in terms of the N/Z ratio equilibration.
CC 70-1 (Nuclear Phenomena)
IT 7439-96-5P, Manganese 55, preparation 7440-03-1P, Niobium 93, preparation 7440-25-7P, Tantalum 181, preparation 7440-38-2P, Arsenic 75, preparation 7440-48-4P, Cobalt 59, preparation 7440-57-5P, Gold 197, preparation 7440-65-5P, Yttrium 89, preparation 7440-69-9P, Bismuth 209, preparation 10043-49-9P, Gold 198, preparation 10098-91-6P, Yttrium 90, preparation 10098-97-2P, Strontium 90, preparation 10198-40-0P, Cobalt 60, preparation 13965-98-5P, Krypton 83, preparation 13966-06-8P, Tin 113, preparation 13966-26-2P, Lead 204, preparation 13966-27-3P, Lead 206, preparation 13966-31-9P, Manganese 54, preparation 13967-66-3P, Iridium 191, preparation 13967-67-4P, Iridium 193, preparation 13967-71-0P, Zirconium 95, preparation 13967-73-2P, Strontium 85, preparation 13967-74-3P, Cerium 141, preparation 13967-76-5P, Niobium 95, preparation 13968-47-3P, Iron 58, preparation 13968-51-9P, Thallium 204, preparation 13968-53-1P, Ruthenium 103, preparation 13981-21-0P, Mercury 198, preparation 13981-25-4P, Copper 64, preparation 13981-27-6P, Zirconium 89, preparation 13981-29-8P, Terbium 160, preparation 13981-32-3P, Selenium 76, preparation 13981-37-8P, Nickel 63, preparation 13981-38-9P, Cobalt 58, preparation 13981-50-5P, Cobalt 57, preparation 13981-51-6P, Mercury 197, preparation 13981-52-7P, Polonium 210, preparation 13981-59-4P, Tin 117, preparation 13981-78-7P, Chromium 53, preparation 13981-80-1P, Nickel 60, preparation 13981-81-2P, Nickel 62, preparation 13981-83-4P, Cobalt 61, preparation 13981-84-5P, Cobalt 63, preparation 13982-00-8P, Tantalum 182, preparation 13982-08-6P, Ytterbium 170, preparation 13982-09-7P, Osmium 186, preparation 13982-12-2P, Rubidium 85, preparation 13982-13-3P, Rubidium 87, preparation 13982-14-4P, Strontium 86, preparation 13982-15-5P, Zirconium 90, preparation 13982-20-2P, Gold

193, preparation 13982-21-3P, Germanium 72, preparation 13982-22-4P, Gallium 72, preparation 13982-23-5P, Zinc 69, preparation 13982-24-6P, Iron 54, preparation 13982-30-4P, Cerium 139, preparation 13982-36-0P, Yttrium 88, preparation 13982-37-1P, Niobium 92, preparation 13982-38-2P, Bismuth 207, preparation 13982-39-3P, Zinc 65, preparation 13982-64-4P, Strontium 87, preparation 13982-78-0P, Mercury 203, preparation 13983-27-2P, Krypton 85, preparation 13994-19-9P, Xenon 127, preparation 14041-45-3P, Ytterbium 167, preparation 14041-50-0P, Ytterbium 171, preparation 14041-51-1P, Ytterbium 173, preparation 14041-52-2P, Ytterbium 172, preparation 14041-58-8P, Cadmium 114, preparation 14092-98-9P, Chromium 52, preparation 14093-02-8P, Iron 56, preparation 14093-09-5P, Hafnium 177, preparation 14093-11-9P, Hafnium 172, preparation 14093-12-0P, Lutetium 172, preparation 14107-52-9P, Thallium 197, preparation 14119-06-3P, Copper 65, preparation 14119-10-9P, Strontium 88, preparation 14119-12-1P, Zirconium 94, preparation 14119-15-4P, Molybdenum 99, preparation 14119-17-6P, Tin 120, preparation 14119-18-7P, Tin 122, preparation 14119-24-5P, Osmium 191, preparation 14119-28-9P, Lead 205, preparation 14119-29-0P, Lead 207, preparation 14119-30-3P, Lead 209, preparation 14133-67-6P, Thallium 207, preparation 14133-76-7P, Technetium 99, preparation 14145-42-7P, Bismuth 208, preparation 14158-27-1P, Strontium 89, preparation 14158-30-6P, Iodine 124, preparation 14158-35-1P, Iridium 194, preparation 14191-65-2P, Rubidium 89, preparation 14191-69-6P, Indium 116, preparation 14191-70-9P, Tin 116, preparation 14191-81-2P, Krypton 82, preparation 14191-82-3P, Krypton 86, preparation 14191-84-5P, Copper 63, preparation 14191-86-7P, Mercury 202, preparation 14191-87-8P, Mercury 199, preparation 14191-88-9P, Platinum 195, preparation 14234-24-3P, Yttrium 91, preparation 14255-04-0P, Lead 210, preparation 14265-71-5P, Selenium 75, preparation 14265-76-0P, Hafnium 179, preparation 14265-77-1P, Hafnium 178, preparation 14265-78-2P, Hafnium 180, preparation 14265-79-3P, Tungsten 180, preparation 14265-80-6P, Tungsten 182, preparation 14265-81-7P, Tungsten 183, preparation 14265-82-8P, Tungsten 184, preparation 14265-83-9P, Tungsten 186, preparation 14265-84-0P, Iridium 189, preparation 14269-78-4P, Ytterbium 169, preparation 14274-68-1P, Yttrium 87, preparation 14274-76-1P, Molybdenum 96, preparation 14274-79-4P, Osmium 190, preparation 14274-81-8P, Osmium 188, preparation 14276-53-0P, Copper 62, preparation 14280-37-6P, Bismuth 199, preparation 14280-38-7P, Bismuth 201, preparation 14280-48-9P, Thallium 203, preparation 14280-49-0P, Thallium 205, preparation 14304-78-0P, Arsenic 74, preparation 14304-79-1P, Tellurium 121, preparation 14304-80-4P, Tellurium 123, preparation 14304-97-3P, Chromium 54, preparation 14320-93-5P, Gold 195, preparation 14331-79-4P, Bismuth 210, preparation 14331-81-8P, Mercury 206, preparation 14331-90-9P, Bromine 84, preparation 14331-91-0P, Strontium 91, preparation 14331-93-2P, Zirconium 91, preparation 14333-38-1P, Bismuth 205, preparation 14336-70-0P, Nickel 59, preparation 14374-79-9P, Antimony 122, preparation 14374-81-3P, Germanium 71, preparation 14378-26-8P, Rhenium 188, preparation 14378-27-9P, Rhenium 190, preparation 14378-32-6P, Zinc 64, preparation 14378-33-7P, Zinc 66, preparation 14378-34-8P, Zinc 67, preparation 14378-35-9P, Zinc 68, preparation 14378-36-0P, Zinc 70, preparation 14378-53-1P, Rhodium 101, preparation 14380-59-7P, Bromine 81, preparation 14391-02-7P, Gallium 69, preparation 14391-03-8P, Gallium 71, preparation 14391-10-7P, Terbium 156, preparation 14391-11-8P, Gold 199, preparation 14391-27-6P, Tantalum 179, preparation 14391-28-7P, Rhenium 185, preparation 14391-29-8P, Rhenium 187, preparation 14391-61-8P, Bromine 80, preparation 14391-63-0P, Rubidium 82, preparation 14391-68-5P, Antimony 120, preparation 14391-73-2P, Copper 66, preparation

14391-74-3P, Gallium 70, preparation 14391-76-5P, Silver 110, preparation 14392-07-5P, Gadolinium 156, preparation 14392-15-5P, Zirconium 92, preparation 14392-17-7P, Molybdenum 95, preparation 14392-19-9P, Molybdenum 97, preparation 14392-20-2P, Molybdenum 98, preparation 14392-21-3P, Molybdenum 100, preparation 14452-48-3P, Hafnium 176, preparation 14484-13-0P, Rhenium 183, preparation 14596-12-4P, Iron 59, preparation 14681-52-8P, Manganese 56, preparation 14681-54-0P, Selenium 80, preparation 14681-59-5P, Iron 55, preparation 14681-63-1P, Niobium 94, preparation 14681-65-3P, Niobium 90, preparation 14681-72-2P, Selenium 77, preparation 14682-97-4P, Niobium 91, preparation 14683-00-2P, Molybdenum 94, preparation 14683-10-4P, Antimony 124, preparation 14683-19-3P, Promethium 148, preparation 14683-24-0P, Gadolinium 154, preparation 14683-25-1P, Dysprosium 160, preparation 14683-29-5P, Ytterbium 174, preparation 14683-32-0P, Tungsten 179, preparation 14683-36-4P, Tantalum 183, preparation 14686-69-2P, Bromine 82, preparation 14687-25-3P, Lead 203, preparation 14687-40-2P, Germanium 75, preparation 14687-41-3P, Germanium 76, preparation 14687-50-4P, Bismuth 202, preparation 14687-58-2P, Selenium 82, preparation 14687-59-3P, Germanium 77, preparation 14687-60-6P, Selenium 83, preparation 14687-61-7P, Arsenic 77, preparation 14687-62-8P, Bromine 83, preparation 14694-69-0P, Iridium 192, preparation 14762-69-7P, Iron 57, preparation 14809-52-0P, Yttrium 85, preparation 14809-53-1P, Yttrium 86, preparation 14809-60-0P, Chromium 55, preparation 14809-62-2P, Cobalt 62, preparation 14809-64-4P, Gallium 74, preparation 14809-66-6P, Arsenic 79, preparation 14809-68-8P, Krypton 87, preparation 14833-10-4P, Vanadium 53, preparation 14833-16-0P, Selenium 78, preparation 14833-43-3P, Erbium 168, preparation 14833-49-9P, Nickel 65, preparation 14834-71-0P, Iridium 187, preparation 14834-72-1P, Promethium 143, preparation 14834-83-4P, Ytterbium 166, preparation 14834-85-6P, Dysprosium 162, preparation 14867-61-9P, Platinum 196, preparation 14900-10-8P, Erbium 164, preparation 14900-11-9P, Erbium 166, preparation 14900-13-1P, Thulium 168, preparation 14900-21-1P, Hafnium 181, preparation 14903-04-9P, Bismuth 204, preparation 14913-25-8P, Dysprosium 158, preparation 14913-50-9P, Thallium 208, preparation 14913-85-0P, Platinum 192, preparation 14913-89-4P, preparation 14914-16-0P, Gold 196, preparation 14914-52-4P, Zinc 71, preparation 14914-59-1P, Palladium 106, preparation 14914-60-4P, Ruthenium 100, preparation 14914-61-5P, Ruthenium 101, preparation 14914-62-6P, Ruthenium 102, preparation 14914-65-9P, Tin 118, preparation 14914-66-0P, Indium 117, preparation 14917-67-0P, Mercury 196, preparation 14922-49-7P, Hafnium 174, preparation 14922-68-0P, Osmium 184, preparation 14922-70-4P, Platinum 188, preparation 14928-10-0P, Nickel 61, preparation 14928-36-0P, Rubidium 88, preparation 14932-41-3P, Tungsten 185, preparation 14932-53-7P, Rubidium 86, preparation 14981-91-0P, Iridium 190, preparation 14983-46-1P, Rhenium 184, preparation 14983-48-3P, Tungsten 187, preparation 14993-36-3P, Osmium 182, preparation

RL: PNU (Preparation, unclassified); PREP (Preparation)
(gamma coincidence study of 208Pb+350 MeV 64Ni collisions with light to heavy mass products)

IT 14993-62-5P, Rhenium 180, preparation 14993-65-8P, Rhenium 181, preparation 14993-91-0P, Krypton 84, preparation 14995-61-0P, Krypton 88, preparation 14998-63-1P, Rhenium 186, preparation 14998-72-2P, Tin 114, preparation 14998-96-0P, Platinum 194, preparation 14999-33-8P, Manganese 53, preparation 15034-51-2P, Gallium 73, preparation 15034-58-9P, Germanium 73, preparation 15034-59-0P, Germanium 74, preparation 15035-09-3P, Thallium 206, preparation 15047-33-3P, Rhenium 179, preparation 15055-22-8P, Tantalum 178, preparation 15055-23-9P, Tungsten 178, preparation 15055-30-8P, Platinum 189,

preparation 15062-08-5P, Osmium 192, preparation 15064-65-0P, Thallium 201, preparation 15064-66-1P, Thallium 199, preparation 15064-97-8P, Mercury 194, preparation 15116-82-2P, Mercury 193, preparation 15125-00-5P, Rubidium 90, preparation 15125-53-8P, Tin 112, preparation 15185-19-0P, Mercury 201, preparation 15229-37-5P, Bismuth 211, preparation 15389-34-1P, Polonium 212, preparation 15411-62-8P, Ruthenium 99, preparation 15422-54-5P, Iron 61, preparation 15422-58-9P, Selenium 81, preparation 15422-59-0P, Arsenic 73, preparation 15575-20-9P, Arsenic 76, preparation 15678-91-8P, Krypton 81, preparation 15690-73-0P, Thallium 209, preparation 15691-06-2P, Zirconium 96, preparation 15700-41-1P, Niobium 98, preparation 15700-42-2P, Niobium 100, preparation 15700-83-1P, Bromine 85, preparation 15701-21-0P, Tantalum 184, preparation 15706-36-2P, Platinum 191, preparation 15706-38-4P, Polonium 204, preparation 15715-01-2P, Astatine 213, preparation 15715-06-7P, Mercury 192, preparation 15720-36-2P, Cobalt 64, preparation 15720-38-4P, Copper 68, preparation 15720-40-8P, Copper 69, preparation 15720-45-3P, Polonium 207, preparation 15720-55-5P, Thallium 200, preparation 15720-57-7P, Thallium 202, preparation 15735-68-9P, Platinum 190, preparation 15735-70-3P, Platinum 193, preparation 15735-74-7P, Platinum 197, preparation 15735-81-6P, Polonium 209, preparation 15735-83-8P, Polonium 211, preparation 15735-86-1P, Polonium 206, preparation 15735-87-2P, Polonium 208, preparation 15741-32-9P, Lutetium 170, preparation 15741-33-0P, Manganese 57, preparation 15743-50-7P, Thallium 198, preparation 15743-54-1P, Ytterbium 168, preparation 15743-55-2P, Zinc 72, preparation 15749-40-3P, Titanium 52, preparation 15749-46-9P, Tungsten 181, preparation 15749-58-3P, Palladium 108, preparation 15750-13-7P, Hafnium 175, preparation 15751-77-6P, Zirconium 93, preparation 15752-22-4P, Iridium 188, preparation 15752-27-9P, Lutetium 171, preparation 15752-86-0P, Lead 202, preparation 15755-35-8P, Arsenic 78, preparation 15755-36-9P, Astatine 212, preparation 15755-38-1P, Astatine 209, preparation 15755-39-2P, Astatine 211, preparation 15756-10-2P, Mercury 200, preparation 15756-14-6P, Mercury 204, preparation 15756-15-7P, Mercury 195, preparation 15756-45-3P, Gold 192, preparation 15756-63-5P, Platinum 198, preparation 15756-69-1P, Polonium 202, preparation 15756-83-9P, Germanium 78, preparation 15756-89-5P, Gold 194, preparation 15756-97-5P, Francium 212, preparation 15757-14-9P, Gallium 68, preparation 15757-23-0P, Hafnium 173, preparation 15757-86-5P, Copper 67, preparation 15758-18-6P, Chromium 56, preparation 15758-45-9P, Selenium 79, preparation 15758-49-3P, Strontium 84, preparation 15759-29-2P, Tantalum 180, preparation 15761-06-5P, Osmium 189, preparation 15765-69-2P, Radon 211, preparation 15765-70-5P, Radon 212, preparation 15765-78-3P, Rhenium 189, preparation 15765-86-3P, Rubidium 84, preparation 15766-01-5P, Ruthenium 104, preparation 15766-16-2P, Nickel 67, preparation 15766-33-3P, Nickel 66, preparation 15766-50-4P, Osmium 185, preparation 15766-52-6P, Osmium 187, preparation 15776-19-9P, Bismuth 206, preparation 15816-77-0P, Lead 211, preparation 15816-99-6P, Iridium 195, preparation 15832-32-3P, Niobium 96, preparation 15832-38-9P, Gold 190, preparation 15832-41-4P, Indium 118, preparation 15840-05-8P, Erbium 162, preparation 16394-57-3P, Gold 191, preparation 16468-57-8P, Germanium 79, preparation 16645-99-1P, Lead 200, preparation 16646-00-7P, Lead 198, preparation 16729-68-3P, Mercury 205, preparation 16729-74-1P, Polonium 203, preparation 16729-76-3P, Polonium 205, preparation 17056-36-9P, Rubidium 83, preparation 17058-33-2P, Radon 209, preparation 17239-85-9P, Bismuth 200, preparation 17239-87-1P, Lead 201, preparation 17620-09-6P, Francium 213, preparation 17638-03-8P, Radium 214, preparation 18390-45-9P, Astatine 208, preparation 18476-92-1P,

Manganese 58, preparation 18496-04-3P, Niobium 97, preparation 18624-12-9P, Cobalt 66, preparation 18724-77-1P, Thallium 196, preparation 18830-37-0P, Astatine 210, preparation 20091-45-6P, Gold 200, preparation 20601-76-7P, Astatine 207, preparation 21402-14-2P, Gallium 75, preparation 21410-52-6P, Gallium 76, preparation 21459-51-8P, Astatine 206, preparation 21459-71-2P, Rhenium 182, preparation 21459-72-3P, Osmium 183, preparation 22453-47-0P, Platinum 187, preparation 22453-70-9P, Niobium 99, preparation 24383-94-6P, Bismuth 203, preparation 24447-13-0P, Iridium 186, preparation 25731-76-4P, Yttrium 84, preparation 26110-67-8P, Krypton 80, preparation 26683-69-2P, Thallium 195, preparation 27485-99-0P, Lead 197, preparation 27486-00-6P, Lead 199, preparation 27742-26-3P, Iridium 184, preparation 28637-43-6P, Vanadium 54, preparation 29054-43-1P, Iridium 185, preparation 29136-29-6P, Radon 214, preparation 29675-20-5P, Iron 62, preparation 29675-21-6P, Nickel 68, preparation 29675-28-3P, Copper 70, preparation 29675-32-9P, Titanium 53, preparation 29675-34-1P, Nickel 69, preparation 29675-35-2P, Zinc 73, preparation 29675-38-5P, Cobalt 65, preparation 30017-28-8P, Copper 71, preparation 32020-21-6P, Iron 60, preparation 32025-57-3P, Radon 213, preparation 33233-20-4P, Radon 210, preparation 33690-55-0P, Arsenic 80, preparation 36819-19-9P, Vanadium 55, preparation 36819-21-3P, Chromium 57, preparation 36819-22-4P, Manganese 59, preparation 42250-70-4P, Chromium 58, preparation 42250-73-7P, Manganese 60, preparation 52813-79-3P, Manganese 61, preparation 58831-77-9P, Iron 64, preparation 58831-78-0P, Iron 63, preparation 72062-02-3P, Manganese 62, preparation
RL: PNU (Preparation, unclassified); PREP (Preparation)
(gamma coincidence study of 208Pb+350 MeV 64Ni collisions with light to heavy mass products)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 7 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2004:56675 CAPLUS Full-text
DOCUMENT NUMBER: 141:29931
TITLE: Preparation of low level sealed 210Pb source for random pulse generator
AUTHOR(S): Mitsugashira, T.; Hara, M.; Tsuyuzaki, N.
CORPORATE SOURCE: Institute for Materials Research, Tohoku University, Japan
SOURCE: KEK Proceedings (2003), 2003-11(Proceedings of the Fourth Workshop on Environmental Radioactivity, 2003), 263-268
CODEN: KEPREW
PUBLISHER: High Energy Accelerator Research Organization
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB Two methods for sealed 210Pb-210Po source preparation, direct deposition from isoPr alc. solution (IPA solution) of 210Pb-210Po nitrate (D-IPA method) and the 210Pb-210Po hydroxides precipitation (PPT method), were exptl. examined In the former D-IPA method, an aliquot of IPA solution of 210Pb-210Po nitrate was directly dropped in a sealed cap for PPD and dried by heating. Then, a polycarbonate (PC) solution of 1/1 mixture of CH2Cl2 and dichloroethane was dropped on the source to make a thin (.apprx.0.1 mg/cm2) film for radioactivity sealed . In the PPT method, 210Pb-210Po hydroxide was filtered on a PC membrane filter (Nuclipore 0.1 μ m) and the membrane filter was dissolved in a 1/1 mixture of CH2Cl2 and dichloroethane. The sealed 210Pb-210Po sources were prepared directly by dropping an aliquot of the solution into the PPD cap followed by its evaporation The sealed sources thus prepared were subjected to 1 m height drop test, air blowing test, and H2O immersion

test. No radioactive contaminants were coming off from the sealed source through these tests.

CC 71-6 (Nuclear Technology)

ST alpha particle source polonium sealing polycarbonate membrane

IT Membrane filters
(for preparation of low level sealed 210Pb source for random pulse generator)

IT Polycarbonates, uses
RL: NUU (Other use, unclassified); USES (Uses)
(for preparation of low level sealed 210Pb source for random pulse generator)

IT Radiation sources
Sealing
(preparation of low level sealed 210Pb source for random pulse generator)

IT 67-63-0, Isopropyl alcohol, uses 75-09-2, Dichloromethane, uses 1300-21-6, Dichloroethane 12027-17-7, Polonium hydroxide (PO(OH)4 127795-35-1, Polonium nitrate
RL: NUU (Other use, unclassified); USES (Uses)
(for preparation of low level sealed 210Pb source for random pulse generator)

IT 12587-46-1, Alpha ray
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(preparation of low level sealed α source for random pulse generator)

IT 13981-52-7, Polonium-210, uses 14255-04-0, Lead-210, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(preparation of low level sealed 210Pb source for random pulse generator)

L84 ANSWER 8 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2002:893088 CAPLUS Full-text
DOCUMENT NUMBER: 138:261764
TITLE: In vitro cell irradiation systems based on 210Po alpha source: construction and characterization
AUTHOR(S): Szabo, J.; Feher, I.; Palfalvi, J.; Balashazy, I.; Dam, A. M.; Polonyi, I.; Bogdandi, E. N.
CORPORATE SOURCE: KFKI Atomic Energy Research Institute, Budapest, H-1525, Hung.
SOURCE: Radiation Measurements (2002), 35(6), 575-578
CODEN: RMEAEP; ISSN: 1350-4487
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB One way of studying the risk to human health of low-level radiation exposure is to make biol. expts. on living cell cultures. Two 210Po α-particle emitting devices, with 0.5 and 100 MBq activity, were designed and constructed to perform such expts. irradiating monolayers of cells. Ests. of dose rate at the cell surface were obtained from measurements by a PIPS α-particle spectrometer and from calcns. by the SRIM 2000, Monte Carlo charged particle transport code. Particle fluence area distributions were measured by solid state nuclear track detectors. The design and dosimetric characterization of the devices are discussed.

CC 71-7 (Nuclear Technology)
Section cross-reference(s): 8

IT Animal tissue culture
Dosimeters

Radiation sources
(210Po α-particle emitting devices: design and dosimetric characterization for in vitro radiobiol. studies)
IT 13981-52-7, 210Po, uses
RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)
(210Po α-particle emitting devices: design and dosimetric characterization for in vitro radiobiol. studies)
IT 7440-69-9, Bismuth-209, uses 14255-04-0, 210Pb, uses 14331-79-4, 210Bi, uses
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(210Po α-particle emitting devices: design and dosimetric characterization for in vitro radiobiol. studies)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 9 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1997:743658 CAPLUS Full-text
DOCUMENT NUMBER: 128:67547
ORIGINAL REFERENCE NO.: 128:13107a,13110a
TITLE: A new method for evaluating annual alpha and beta dose rates in different ceramic samples by using solid state nuclear track detectors
AUTHOR(S): Misdaq, M. A.; Fahde, K.; Erramli, H.; Mikdad, A.
CORPORATE SOURCE: Nuclear Physics and Techniques Laboratory, Faculty of Sciences Semlalia, University Cadi Ayyad, Marrakech, Morocco
SOURCE: Radiation Physics and Chemistry (1997), 50(3), 293-297
CODEN: RPCHDM; ISSN: 0969-806X
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Uranium and thorium contents in different ceramic samples have been evaluated by using CR-39 and LR-115 type II solid state nuclear track detectors (SSNTDs) and calculating the probabilities for α-particles to reach and be registered on the SSNTD films. A new method has been developed based on calculating the stopping powers of the studied materials for the α- and β-particles emitted by the nuclei of the uranium and thorium series for evaluating annual α- and β-dose rates in the considered ceramic samples. β-Dose rates due to potassium 40 (40K) have been evaluated for the studied materials. α-Dose rates of the considered ceramic samples have been compared with data obtained by using Bell's method.
CC 71-7 (Nuclear Technology)
Section cross-reference(s): 57, 79
IT 25656-90-0, Diethylene glycol bis(allyl carbonate) homopolymer
RL: DEV (Device component use); USES (Uses)
(CR-39; evaluating annual α- and β-dose rates emitted by U and Th series nuclei in different ceramic samples by using solid state nuclear track detectors)
IT 9004-70-0, LR 115II
RL: DEV (Device component use); USES (Uses)
(LR-115 type II; evaluating annual α- and β-dose rates emitted by U and Th series nuclei in different ceramic samples by using solid state nuclear track detectors)
IT 7440-29-1, Thorium, analysis 14274-82-9, Thorium 228, analysis 14913-49-6, Bismuth 212, analysis 15389-34-1, Polonium 212, analysis

15756-58-8, Polonium 216, analysis 22481-48-7, Radon 220, analysis 28522-22-7, Radon 224, analysis
RL: ANT (Analyte); ANST (Analytical study)
(evaluating annual α-dose rates emitted by Th series nuclei in different ceramic samples by using solid state nuclear track detectors)

IT 7440-61-1, Uranium, analysis 13966-29-5, Uranium 234, analysis 13981-52-7, Polonium 210, analysis 13982-63-3, Radium 226, analysis 14269-63-7, Thorium 230, analysis 14859-67-7, Radon 222, analysis 15422-74-9, Polonium 218, analysis 15735-67-8, Polonium 214, analysis
RL: ANT (Analyte); ANST (Analytical study)
(evaluating annual α-dose rates emitted by U series nuclei in different ceramic samples by using solid state nuclear track detectors)

IT 14331-83-0, Actinium 228, analysis 14913-50-9, Thallium 208, analysis 15092-94-1, Lead 212, analysis 121239-98-3, Radon 228, analysis
RL: ANT (Analyte); ANST (Analytical study)
(evaluating annual β-dose rates emitted by Th series nuclei in different ceramic samples by using solid state nuclear track detectors)

IT 14255-04-0, Lead 210, analysis 14331-79-4, Bismuth 210, analysis 14733-03-0, Bismuth 214, analysis 15035-09-3, Thallium 206, analysis 15065-10-8, Thorium 234, analysis 15067-28-4, Lead 214, analysis 15100-28-4, Protactinium 234, analysis 51634-37-8, Thallium 218, analysis
RL: ANT (Analyte); ANST (Analytical study)
(evaluating annual β-dose rates emitted by U series nuclei in different ceramic samples by using solid state nuclear track detectors)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 10 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1983:412475 CAPLUS Full-text
DOCUMENT NUMBER: 99:12475
ORIGINAL REFERENCE NO.: 99:1947a,1950a
TITLE: Investigation of nitric acid for removal of noxious radionuclides from uranium ore or mill tailings
AUTHOR(S): Ryon, A. D.; Bond, W. D.; Hurst, F. J.; Scheitlin, F. M.; Seeley, F. G.
CORPORATE SOURCE: Oak Ridge Natl. Lab., Oak Ridge, TN, 37830, USA
SOURCE: Uranium Mill Tailings Manage., Proc. Two NEA Workshops (1982), Meeting Date 1981, 139-47. OECD: Paris, Fr.
CODEN: 49VJAB
DOCUMENT TYPE: Conference
LANGUAGE: English

AB A conceptual process using HNO3 [7697-37-2] to extract 226Ra and 230Th in addition to the U from ore is proposed to decrease the potential hazard from discharge of mill tailings to the environment. This process removes ≤98% of the 226Ra and 230Th, yielding a residue containing as low as 10 pCi of Ra/g. Leaching of U from ores is consistently >99.5%. The residue after multistage leaching with HNO3 is resistant to further Ra leaching with water. Rn emanation from HNO3-leached residues generally is low due to the low Ra content. Heating to 800° causes further reduction of Rn emanation. Greater than 99% recovery of Ra from HNO3-leach solns. is obtained by carrying it on BaSO4. Good adsorption of Ra is also obtained on barite and Celite. Recovery of Th and U by solvent extraction using Bu3PO4 appears promising. Recycle of HNO3 may be accomplished by solvent extraction combined with evaporation and calcination.

CC 71-10 (Nuclear Technology)

Section cross-reference(s): 54
IT 10043-92-2, properties
RL: PRP (Properties)
(emanation of, from nitric acid leach solution of uranium ore)
IT 7440-61-1P, properties 13981-52-7P, properties 13982-63-3P, properties 14255-04-0P, properties 14269-63-7P, properties
RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(leaching of, from uranium ore, in nitric acid solution)

L84 ANSWER 11 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1978:185371 CAPLUS Full-text
DOCUMENT NUMBER: 88:185371
ORIGINAL REFERENCE NO.: 88:29107a,29110a
TITLE: Analysis of alpha emitters in the coral, Favites virens, from Bikini Lagoon by solid-state track detection
AUTHOR(S): Levy, Yitzhak; Miller, Donald S.; Friedman, Gerald M.; Noshkin, Victor E.
CORPORATE SOURCE: Dep. Geol., Rensselaer Polytech. Inst., Troy, NY, USA
SOURCE: Health Physics (1978), 34(3), 209-17
CODEN: HLTPAO; ISSN: 0017-9078
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A quant. method for the nondestructive anal. of α-particle emitters in CaCO3 matrixes by solid-state track detection (cellulose nitrate) was developed. In an area of 4 mm2, .apprx.0.4 pCi/g can be measured routinely; smaller concns. can be determined but with a lower resolution Calibration methods used were (a) a Pu source of 0.15 μCi in conjunction with polycarbonate and CaCO3 absorbers of different thickness (2-30 μm) and (b) a powdered coral sample from Enewetok Atoll that had been radiochem. analyzed for Pu radionuclides, 241Am, and other long-lived fission and activation products. Slabs of a coral, F. virens, from Bikini lagoon were analyzed. A quantity of the α-particle emitters detected in regions of the coral identified with growth during nuclear testing (1954, 1956, and 1959) are found in small discrete spots. Thin sections cut parallel to the direction of coral growth give different patterns of distributions. No such hot spots are evident in any post-test-yr growth sections although Pu and other long-lived fission and activation products were measured in these sections by radiochem. techniques.
CC 8-1 (Radiation Biochemistry)
ST alpha particle emitter detn coral
IT Favites virens
(alpha-particle emitters determination in, by solid-state track detector)
IT 7440-29-1, analysis 7440-61-1, analysis 13981-16-3, analysis 13981-52-7, analysis 13982-63-3, analysis 14119-33-6, analysis 14255-04-0, analysis 14269-63-7, analysis 14274-82-9, analysis 14596-10-2, analysis 15117-48-3, analysis 15117-96-1, analysis
RL: ANT (Analyte); ANST (Analytical study)
(determination of, by solid-state track detector)

L84 ANSWER 12 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1977:570658 CAPLUS Full-text
DOCUMENT NUMBER: 87:170658
ORIGINAL REFERENCE NO.: 87:26955a,26958a
TITLE: Emission and enrichments of radon daughters from Etna volcano magma
AUTHOR(S): Lambert, G.; Bristeau, P.; Polian, G.
CORPORATE SOURCE: Cent. Faibles Radioact., CNRS-CEA, Fr.
SOURCE: Geophysical Research Letters (1976), 3(12), 724-6

CODEN: GPRLAJ; ISSN: 0094-8276
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Studies of the Etna volcano plume show that Rn daughters as well as gaseous Rn are directly emitted from the magma. Enrichment factors observed are 4 for Bi vs. Pb and 6 for Po vs. Pb. These enrichments correlate with relative volatility of the elements and/or their different compds. The 210Pb total output measured for the Etna plume is an insignificant source for this nuclide.
CC 53-3 (Mineralogical and Geological Chemistry)
IT 10043-92-2P, preparation 13981-52-7P, preparation 14255-04-0P, preparation
RL: PREP (Preparation)
(emission of, from Etna Volcano)

L84 ANSWER 13 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1958:14581 CAPLUS Full-text
DOCUMENT NUMBER: 52:14581
ORIGINAL REFERENCE NO.: 52:2594a-b
TITLE: Energy of α-particles from polonium-210
AUTHOR(S): Agapkin, I. I.; Gol'din, L. L.
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya (1957), 21, 909-12
CODEN: IANFAY; ISSN: 0367-6765
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB The measurements were made with a magnetic α-spectrometer. Error sources were listed; it was observed that freshly made prepns. had reproducible results. By using a correction for the half-width of the line, obtained by varying the slit width, an energy of 5297.8 ± 1.5 e.kv. was obtained, compared to the tabulated value of 5300.6 ± 2.6 e.kv. For Em220 the energy was 6282.4 (tabulated value 6282.3 ± 1.3 e.kv.).
CC 3A (Nuclear Phenomena)
IT 13981-52-7P, Polonium, isotope of mass 210
RL: PREP (Preparation)
(separation from Bi210 and Pb210)
IT 14255-04-0P, Lead, isotope of mass 210
RL: PREP (Preparation)
(separation from Bi210 and Po210)
IT 13981-52-7, Polonium, isotope of mass 210 22481-48-7, Radon, isotope of mass 220
(α-rays from)

L84 ANSWER 14 OF 31 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1956:3794 CAPLUS Full-text
DOCUMENT NUMBER: 50:3794
ORIGINAL REFERENCE NO.: 50:690f-g
TITLE: Purification of radioactive deposits formed in radon needles
AUTHOR(S): Ferreira de Miranda, C.
CORPORATE SOURCE: Fac. cienc., Lisbon, Port.
SOURCE: Rev. fac. cienc. Univ. Lisboa (1954), 3, 191-5
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB Rn needles are treated with 3N HNO3 and the liquid is centrifuged. The solution is heated up to 45° and a solution of 1.5N KCN is added. The precipitate is separated by centrifugation and redissolved in 0.5N HNO3. The procedure is repeated twice. The radioactive material formed by Ra D, Ra E, and Ra F is concentrated in the last HNO3 solution

CC 3A (Nuclear Phenomena)
IT 13981-52-7P, Polonium, isotope of mass 210 14255-04-0P,
Lead, isotope of mass 210
RL: PREP (Preparation)
(concentration from Rn deposits)
IT 10043-92-2, Radon
(decay products of)

L84 ANSWER 15 OF 31 WPIX COPYRIGHT 2008 THOMSON REUTERS on STN
DUPLICATE 6
ACCESSION NUMBER: 1981-42085D [23] WPIX
TITLE: Locating deposits of uranium and thorium - by collecting field samples forming chemical sons. and examining alpha sensitive films exposed to delay prods.
DERWENT CLASS: K08; S03
INVENTOR: STIEFF L R
PATENT ASSIGNEE: (STIE-I) STIEFF L R
COUNTRY COUNT: 2

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 4268748	A	19810519	(198123)*	EN		
CA 1145067	A	19830419	(198319)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 4268748 A		US 1978-879578	19780221
US 4268748 A		US 1978-899937	19780425
US 4268748 A		US 1979-106424	19791221

INT. PATENT CLASSIF.:
IPC RECLASSIF.: G01V0005-00 [I,A]; G01V0005-00 [I,C]
ECLA: G01V0005-00
USCLASS NCLM: 250/255.000
NCLS: 250/472.100; 250/DIG.002
BASIC ABSTRACT:
US 4268748 A UPAB: 20050419 Uranium deposits are detected by collecting subsurface samples from a location and examining the samples for characteristic daughter prods. Pb, Bi and Po are chemically extracted from the samples. First and second alpha particle sensitive films are exposed to record decay of Po 214 and Po210. After etching, alpha particle damage populations are determined and correlated with sample locations in order to determine the position of a uranium deposit. Samples are collected from differentiated zones surrounding the deposit. Planchets on which alpha active Po from solution has been deposited are exposed to the alpha sensitive film. The method detects deposits of uranium by measuring Pb214, Bi 214, Po214, Pb210, and Po210 daughters. The deposits are distinguished from thorium deposits which can also be located. MANUAL CODE: CPI: K08-A; K09-J
EPI: S03-C03; S03-G01

L84 ANSWER 16 OF 31 WPIX COPYRIGHT 2008 THOMSON REUTERS on STN
ACCESSION NUMBER: 2003-776157 [73] WPIX
CROSS REFERENCE: 2003-197783; 2003-898376

DOC. NO. CPI: C2003-213524 [73]
DOC. NO. NON-CPI: N2003-621799 [73]
TITLE: Removal of radioactive contaminants from surface involves retaining aqueous solution comprising wetting agent and active agent on surface and removing aqueous solution containing radioactive contaminants from surface
DERWENT CLASS: A17; A25; A97; K07; P43
INVENTOR: MARTIN R T
PATENT ASSIGNEE: (BOBO-N) BOBOLINK INC
COUNTRY COUNT: 1

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 6605158	B1	20030812	(200373)*	EN	8[0]	

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 6605158 B1	CIP of	US 2001-976467	20011012
US 6605158 B1		US 2002-283039	20021024

FILING DETAILS:

PATENT NO	KIND	PATENT NO
US 6605158 B1	CIP of	US 6497769 B

PRIORITY APPLN. INFO: US 2002-283039 20021024
US 2001-976467 20011012
INT. PATENT CLASSIF.:
IPC RECLASSIF.: C11D0011-00 [I,A]; C11D0011-00 [I,C]; C11D0007-02 [I,C]; C11D0007-08 [I,A]; C11D0007-22 [I,C]; C11D0007-26 [I,A]; C11D0007-32 [I,A]; G21F0009-28 [I,A]; G21F0009-28 [I,C]
ECLA: C11D0007-08; C11D0007-26E; C11D0007-32D; C11D0011-00B2D; C11D0011-00B8; G21F0009-28
ICO: M11D0007:26A
USCLASS NCLM: 134/010.000
NCLS: 134/002.000; 134/003.000; 134/022.190; 134/026.000; 134/028.000; 134/036.000; 134/041.000; 134/042.000; 210/682.000; 210/688.000; 376/308.000; 376/309.000; 376/310.000; 423/002.000; 423/003.000; 423/020.000; 510/110.000; 588/001.000; 588/020.000; 976/DIG.376; 976/DIG.391

BASIC ABSTRACT:

US 6605158 B1 UPAB: 20050601

NOVELTY - Radioactive contaminants are removed from a surface by applying to the surface an aqueous solution comprising a wetting agent and an active agent; retaining the aqueous solution on the surface for a time to allow radioactive contaminants to migrate into the solution; and removing the solution containing the radioactive contaminants from the surface. The active agent is a specified complex substituted keto-amine.

DETAILED DESCRIPTION - Removal of radioactive contaminants from a surface includes applying to the surface an aqueous solution comprising a wetting agent and an active agent; retaining the aqueous solution on the surface for a time to allow radioactive contaminants to migrate into the aqueous solution; and removing the aqueous solution containing the radioactive contaminants from the surface. The wetting agent is methanol, ethanol, propanol, isopropanol,

butanol, propargyl alcohol, tertiary butyl alcohol, pentanol, propylene glycol, polypropylene glycol, and/or ethylene glycol. The active agent is a complex substituted keto-amine having the formula (I).

R-N(R')(CH2R'') (I)

R = abietyl, hydroabietyl, or dehydroabietyl; R'' = alpha ketonyl having fewer than 10C; and R' = H, or CH2R''.

USE - For removing radioactive contaminants from a surface.

ADVANTAGE - The inventive method has the effect of removing all of the radioactive contaminants from a previously contaminated surface. It is simple, economic, and an effective way of removing all of the radioactive contaminants from various surfaces or areas. MANUAL CODE: CPI: A12-W11C; A12-W11F; K07-A03

ABEX EXAMPLE - Several decontamination solutions were prepared and tested utilizing various acids but containing the amount of keto-amine (0.5%), isopropyl alcohol (0.3%) and propargyl alcohol (0.3%). Each solution had a pH of at most1.2. The solutions were applied as a low-pressure spray, allowed to remain at the site for 5 minutes and then removed by a squeegee. The spent solution was neutralized to a pH of 7, using a 50% sodium hydroxide solution. Surface contamination levels of both alpha and beta emissions were measured before and after treatment. The results showed degrees of effectiveness in removing radioactivity from surfaces utilizing a strong acid combined with a keto-amine as the active agent and a mixture of lower alcohols.

TECH

INORGANIC CHEMISTRY - Preferred Component: The aqueous solution further comprises an acid from hydrochloric acid, hydrofluoric acid, sulfuric acid, phosphoric acid, sulfurous acid, bromic acid, iodic acid, nitric acid, perchloric acid, oxalic acid, aqua regia, citric acid, sulfamic acid, glycolic acid, and/or ascorbic acid. It contains 0.1-1 wt.% wetting agent, 0.1-2 wt.% complex substituted keto-amine, and 0 wt.% acid. The complex substituted keto-amine has the molecular formula C33H45NO2C1H. The alpha ketonyl group is a ketone from acetone, methyl ethyl ketone, diacetone alcohol, isophorone, mesityl oxide, pentane dione, acetonyl acetone, cyclopentanone, cyclohexanone, or acetophenone. The wetting agent is a mixture of isopropanol and propargyl alcohol.

INORGANIC CHEMISTRY - Preferred Component: The radioactive contaminant is a member of the lanthanide or actinide group. It is preferably Actinium-227, Americium-241, Americium-243, Antimony-124, Antimony-125, Barium-133, Beryllium-7, Bismuth-207, Cadmium-109, Calcium-45, Carbon-14, Cerium-139, Cerium-141, Cerium-144, Cesium-134, Cesium-135, Cesium-137, Chromium-51, Cobalt-56, Cobalt-57, Cobalt-58, Cobalt-60, Copper-67, Curium-242, Curium-243, Curium-244, Curium-247, Europium-152, Europium-154, Europium-155, Gadolinium-153, Germanium-68, Gold-195, Hafnium-181, Hydrogen-3 (Tritium), Iodine-125, Iodine-126, Iodine-129, Iodine-131, Iodine-133, Iridium-192, Iron-55, Iron-59, Lead-210, Manganese-54, Mercury-203, Neptunium-237, Nickel-59, Nickel-63, Niobium-94, Plutonium-236, Plutonium-238, Plutonium-239, Plutonium-240, Plutonium-241, Plutonium242, Plutonium-243, Plutonium-244, Polonium-210, Potassium-40, Promethium-147, Protactinium-231, Radium-223, Radium-224, Radium-226, Radium-228, Ruthenium-106, Samarium-151, Scandium-46, Selenium75, Silver-108m, Silver-110m, Sodium-22, Strontium-85, Strontium-89, Strontium-90, Sulfur-35, Tantalum-182, Technetium-99, Thallium-204, Thorium-natural, Thorium-228, Thorium-230, Thorium-232, Tin-113, Uranium-232, Uranium-233, Uranium-234, Uranium-235, Uranium-236, Uranium-238, Uranium-natural, Uranium-depleted, Yttrium-88, Yttrium-91, Zinc-65, Zirconium-95, or their associated decay products.

INSTRUMENTATION AND TESTING - Preferred Method: The applying, retaining and removing steps are repeated to optimize decontamination. The aqueous solution is applied to the surface by spraying. It is retained on the surface for less than 10 minutes.

Preferred Component: The surface is a metal, plastic, glass, concrete, wood, fiberglass, fabric, and/or soil.

L84 ANSWER 17 OF 31 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN DUPLICATE 4

ACCESSION NUMBER: 1997:358484 BIOSIS Full-text
DOCUMENT NUMBER: PREV199799664887
TITLE: Retrospective assessment of radon exposure by measurements of 210Po implanted in surfaces using an alpha track detector technique.
AUTHOR(S): Falk, R.; Mellander, H.; Nyblom, L.; Ostergren, I.
CORPORATE SOURCE: Swedish Radiation Protection Inst., S-171 16 Stockholm, Sweden
SOURCE: Environment International, (1996) Vol. 22, No. SUPPL. 1, pp. S857-S861.
CODEN: ENVIDV. ISSN: 0160-4120.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 25 Aug 1997
Last Updated on STN: 25 Aug 1997

ABSTRACT:The radon exposure of the past is important in epidemiological studies where an assessment of lung cancer risk from indoor ***radon*** exposure is evaluated. The long-lived decay product, ***210Pb*** (T/2 = 22 y), is implanted into indoor surfaces by alpha recoils and can be monitored to give information about the previous radon history. This gives an alternative or complementary method to the traditional measurements of the current average radon concentration. Autoradiographic alpha-track methods to assess the 210Pb activity implanted in glass surfaces by measurement of 210Po alpha activity were investigated to find a simple and reliable method for field use. One limiting factor at low exposure levels is the alpha background activity in the sub-surface material. In the search for a practical field method, the use of two different alpha-track detector materials was found successful. By exposing one Kodak LR-115 cellulose-nitrate film and one CR-39 detector side by side on glass panes, the background of the glass is measured with the LR-115 and both the background and the signal by the CR-39 detector. Results from measurements in 31 dwellings show that an exposure of more than 1000 Bq cntdot y-m-3 to a glass surface can be measured with the (CR-LR) difference technique. Experiences from the field measurements show the method to be accurate, simple, and reliable and therefore a promising tool for future radon epidemiological studies.

CONCEPT CODE: Radiation biology - Radiation effects and protective measures 06506
Biochemistry studies - Minerals 10069
Toxicology - Environment and industry 22506
Public health - Air, water and soil pollution 37015
Public health - Radiation health 37017

INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Pollution Assessment Control and Management; Radiation Biology; Toxicology

INDEX TERMS: Chemicals & Biochemicals
RADON; POLONIUM-210; CR-39

INDEX TERMS: Miscellaneous Descriptors
ALPHA TRACK DETECTOR TECHNIQUE; ASSESSMENT METHOD; CARCINOGEN; CR-39 DETECTOR; EPIDEMIOLOGICAL STUDIES; EXPOSURE; INDOOR; LONG-LIVED DECAY PRODUCT; LUNG CANCER;

NEOPLASTIC DISEASE; POLLUTION; POLONIUM-210; RADIATION BIOLOGY; RADIONUCLIDES; RADON; RESPIRATORY SYSTEM DISEASE; RISK

REGISTRY NUMBER: 10043-92-2 (RADON)
13981-52-7 (POLONIUM-210)
25656-90-0Q (CR-39)
81283-55-8Q (CR-39)

L84 ANSWER 18 OF 31 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN DUPLICATE 5

ACCESSION NUMBER: 1989:159461 BIOSIS Full-text
DOCUMENT NUMBER: PREV198987081562; BA87:81562
TITLE: POLONIUM IN FLORIDA USA GROUNDWATER AND ITS POSSIBLE RELATIONSHIP TO THE SULFUR CYCLE AND BACTERIA.
AUTHOR(S): HARADA K [Reprint author]; BURNETT W C; LAROCK P A; COWART J B
CORPORATE SOURCE: DEP OCEANOGRAPHY, FLA STATE UNIV, TALLAHASSEE, FLA 32306, USA
SOURCE: Geochimica et Cosmochimica Acta, (1989) Vol. 53, No. 1, pp. 143-150.
CODEN: GCACAK. ISSN: 0016-7037.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 25 Mar 1989
Last Updated on STN: 25 Mar 1989

ABSTRACT:The last radioactive member of the 238U natural decay-series, ***210Po*** is normally considered a very particle-reactive isotope. Analysis of most natural waters shows that 210Po is present at very low activities, usually even lower than its insoluble precursor, 210Pb. We have recently discovered, however, that 210Pb exists at very high concentrations in groundwaters of some shallow aquifers in west central Florida. These waters tend to be fairly acidic (pH < 5), sulfide-bearing, and relatively high in 222Rn. Detailed study of one well with extraordinary levels of 210Pb (.apprx. 1000 dpm/l) indicates that: (1) 210Po in this water is in great excess of radioactive equilibrium with its predecessors ***210Pb*** and 210Bi; (2) most Po in this water exists in a form which does not coprecipitate with an iron hydroxide scavenge; and (3) the conversion of soluble (0.2 μm filter) to particulate Po occurs over a time scale of a few days during sulfide oxidation. We suspect that Po cycling in this environment is related to the sulfur cycle and may, therefore, be influenced by sulfur bacteria.

CONCEPT CODE: General biology - Conservation and resource management 00512
Radiation biology - General 06502
Circadian rhythms and other periodic cycles 07200
Ecology: environmental biology - Oceanography and limnology 07510
Biochemistry studies - Minerals 10069
Bacteriology, general and systematic 30000
Physiology and biochemistry of bacteria 31000
Food microbiology - Biodegradation and biodeterioration 39006
Soil science - Physics and chemistry 52805

INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Biosynchronization; Conservation; Estuarine Ecology (Ecology, Environmental Sciences); Radiation Biology; Soil Science; Systematics and Taxonomy

INDEX TERMS: Miscellaneous Descriptors

AQUIFER CHEMICAL ANALYSIS RADON URANIUM
ORGANISM: Classifier
Bacteria 05000
Super Taxa
Microorganisms
Taxa Notes
Bacteria, Eubacteria, Microorganisms
REGISTRY NUMBER: 7440-08-6 (POLONIUM)
7704-34-9 (SULFUR)
10043-92-2 (RADON)
7440-61-1 (URANIUM)

L84 ANSWER 19 OF 31 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN
ACCESSION NUMBER: 2003:4191 BIOSIS Full-text
DOCUMENT NUMBER: PREV200300004191
TITLE: Experimental methods of determining the activity depth distribution of implanted 210Pb in glass.
AUTHOR(S): Roos, Birgitta [Reprint Author]; Samuelsson, Christer
CORPORATE SOURCE: Department of Radiation Physics, Lund University Hospital, SE-221 85, Lund, Sweden
birgitta.roos@radfys.lu.se
SOURCE: Journal of Environmental Radioactivity, (2002) Vol. 63, No. 2, pp. 135-151. print.
ISSN: 0265-931X (ISSN print).
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 18 Dec 2002
Last Updated on STN: 18 Dec 2002
ABSTRACT:Glass is often used in radon surveys to estimate retrospective radon concentrations, as radon progenies are embedded in the upper surface layer. Experimental methods based on etching to determine the depth distribution of recoil-implanted 210Po in glass from radon decay in air is presented. By carefully controlling chemical concentrations and exposure time during which the glass is etched, stepwise removal of the surface material was possible. Two different etching agents, diluted HF/HNO3 and NaOH were utilised, with very similar results. Experimental recoil depths of 210Po agree with theoretical calculations from the literature. The maximum implantation depth obtained using this procedure was 100+-20nm.
CONCEPT CODE: Radiation biology - General 06502
Biochemistry studies - General 10060
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Radiation Biology
INDEX TERMS: Chemicals & Biochemicals
glass; hydrofluoric acid; lead-210: depth distribution; nitric acid; radon; sodium hydroxide
INDEX TERMS: Methods & Equipment
radon survey: applied and field techniques
REGISTRY NUMBER: 7664-39-3 (hydrofluoric acid)
14255-04-0 (lead-210)
7697-37-2 (nitric acid)
10043-92-2 (radon)
1310-73-2 (sodium hydroxide)

L84 ANSWER 20 OF 31 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN
ACCESSION NUMBER: 1985:424029 BIOSIS Full-text
DOCUMENT NUMBER: PREV198580094021; BA80:94021

TITLE: A PRACTICAL METHOD FOR THE SIMULTANEOUS DETERMINATION OF THORIUM-234 RADON-226 LEAD-210 AND POLONIUM-210 IN SEAWATER.
AUTHOR(S): HARADA K [Reprint author]; TSUNOGAI S
CORPORATE SOURCE: DEP CHEM, FACULTY FISHERIES, HOKKAIDO UNIV, HAKODATE, 041, JAPAN
SOURCE: Journal of the Oceanographical Society of Japan, (1985) Vol. 41, No. 2, pp. 98-104.
CODEN: NKGKB4. ISSN: 0029-8131.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ABSTRACT:A practical method was developed for the simultaneous determination of 226Ra, 234Th, 210Pb and 210Po in seawater. Samples are spiked with 228Ra, 230Th, 208Po and common Pb to determine chemical yield. These nuclides are coprecipitated with calcium carbonate and ferric ***hydroxide*** from 20-50 l of seawater and separated by using coprecipitation and ion exchange techniques. Counting sources of Ra and the other nuclides are prepared by electrodeposition onto silver discs. Their radioactivites are counted with an α-spectrometer and a low background β-counter. This method gives a standard deviation of .apprx. 5% for replicate determination of 226Ra and other nuclides.
CONCEPT CODE: Methods - Field methods 01008
Mathematical biology and statistical methods 04500
Radiation biology - Radiation and isotope techniques 06504
Ecology: environmental biology - Oceanography 07512
Biochemistry methods - General 10050
Biochemistry studies - General 10060
Biophysics - Methods and techniques 10504
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Marine Ecology (Ecology, Environmental Sciences); Methods and Techniques; Radiology (Medical Sciences)
INDEX TERMS: Miscellaneous Descriptors
COPRECIPITATION ION EXCHANGE ELECTRODEPOSITION RADIOACTIVITY SPECTROMETER
REGISTRY NUMBER: 15065-10-8 (THORIUM-234)
16369-95-2 (RADON-226)
14255-04-0 (LEAD-210)
13981-52-7 (POLONIUM-210)

L84 ANSWER 21 OF 31 ENERGY COPYRIGHT 2008 USDOE/IEA-ETDE on STN
ACCESSION NUMBER: 2008(2):11838 ENERGY Full-text
TITLE: Uncertainties of retrospective radon concentration measurements by multilayer surface trap detector.
AUTHOR: Bastrikov, V.; Kruzhalov, A. (Ural State Technical Univ., Yekaterinburg (Russian Federation)); Zhukovsky, M. (Institute of Industrial Ecology UB RAS, Yekaterinburg (Russian Federation))
CORPORATE SOURCE: Societe Francaise de Radioprotection - SFRP, BP72, 92263 Fontenay-aux-Roses Cedex (France)
NUMBER OF REPORT: INIS-FR--7038
SOURCE: 2006. 11 p. Available from INIS in electronic form. Conference: Second European IRPA congress on radiation protection - Radiation protection: from knowledge to action, Paris (France), 15-19 May 2006
DOCUMENT TYPE: Miscellaneous; Availability Note; Conference
COUNTRY: France
LANGUAGE: English

FIELD AVAILABILITY: AB
ABSTRACT: The detector for retrospective radon exposure measurements is developed. The detector consists of the multilayer package of solid-state nuclear track detectors LR-115 type. Nitrocellulose films works both as A-particle detector and as absorber decreasing the energy of A-particles. The uncertainties of implanted 210Pb measurements by two- and three-layer detectors are assessed in dependence on surface 210Po activity and gross background activity of the glass. The generalized compartment behavior model of radon decay products in the room atmosphere was developed and verified. It is shown that the most influencing parameters on the value of conversion coefficient from 210Po surface activity to average radon concentration are aerosol particles concentration, deposition velocity of unattached 218Po and air exchange rate. It is demonstrated that with the use of additional information on surface to volume room ratio, air exchange rate and aerosol particles concentration the systematic bias of conversion coefficient between surface activity of 210Po and average radon concentration can be decreased up to 30 %. (N.C.)
CLASSIFICATION CODE: *S46 INSTRUMENTATION RELATED TO NUCLEAR SCIENCE AND TECHNOLOGY
CONTROLLED TERM: ALPHA DECAY RADIOISOTOPES; LEAD 210; LEAD 214; POLONIUM 214; POLONIUM 218; RADIATION DETECTORS; RADIATION DOSES; RADON; RISK ASSESSMENT; THORIUM 232; URANIUM 238
BROADER TERM: ACTINIDE NUCLEI; ALPHA DECAY RADIOISOTOPES; BETA DECAY RADIOISOTOPES; BETA-MINUS DECAY RADIOISOTOPES; DOSES; ELEMENTS; EVEN-EVEN NUCLEI; FLUIDS; GASES; HEAVY NUCLEI; ISOTOPES; LEAD ISOTOPES; MEASURING INSTRUMENTS; MICROSECONDS LIVING RADIOISOTOPES; MINUTES LIVING RADIOISOTOPES; NONMETALS; NUCLEI; POLONIUM ISOTOPES; RADIOISOTOPES; RARE GASES; SPONTANEOUS FISSION RADIOISOTOPES; THORIUM ISOTOPES; URANIUM ISOTOPES; YEARS LIVING RADIOISOTOPES

L84 ANSWER 22 OF 31 ENERGY COPYRIGHT 2008 USDOE/IEA-ETDE on STN
ACCESSION NUMBER: 2006(1):198 ENERGY Full-text
TITLE: 210Po and 210Pb in seals from the Baltic Sea and Lake Saimaa, Finland.
AUTHOR: Solatie, D.; Rissanen, K. (Radiation and Nuclear Safety Authority - STUK, Rovaniemi (Finland). Regional Laboratory in Northern Finland); Vesterbacka, P. (Radiation and Nuclear Safety Authority - STUK, Helsinki (Finland). Natural Radiation Laboratory)
NUMBER OF REPORT: SSI--2005-15
SOURCE: Radiological Protection in Transition. Proceedings of the 14. Regular Meeting of the Nordic Society for Radiation Protection, NSFS.
Editor(s): Valentin, J.; Cederlund, T.; Drake, P.; Finne, I.E.; Glansholm, A.; Jaworska, A.; Paile, W.; Rahola, T.
Swedish Radiation Protection Authority, Stockholm (Sweden)
Sep 2005. p. 237 of 386 p. Available from: http://www.ssi.se/ssi/sub r/apporter/pdf/ssi/sub r/app/sub 2/005/sub 1/5.pd; OSTI; Commercial reproduction prohibited; OSTI as DE20674930; PURL: https://www.osti.gov/servlets/purl/20674930-Up6xtr/.
Conference: Radiological Protection in Transition. 14. Regular Meeting of the Nordic Society for Radiation Protection, NSFS, Raettvik (Sweden), 27 - 31 Aug 2005
ISSN: 0282-4434
DOCUMENT TYPE: Report Article; Conference

COUNTRY: Sweden
LANGUAGE: English
FIELD AVAILABILITY: AB
ABSTRACT: 210Po and 210Pb are members of the 238U decay chain. 210Po is an alpha-emitter with a half-life of 138 days, while its grandmother, 210Pb is a beta-emitter with 22.3 year half-life. In the atmosphere 222Rn formats its decay products 210Po and 210Pb. These nuclides are deposited on to the surface of land and sea and thus enter the food chain. The naturally occurring radionuclides 210Po and 210Pb are important because their great contribution to radiation dose to human and other species. As top predators in the aquatic food chain, fish-eating seals are vulnerable to the accumulation of contaminants. In the Regional Laboratory in Northern Finland, measurements of 210Po and 210Pb activity concentrations in seals from the Baltic Sea and in ringed seals from Lake Saimaa have been performed. Concentrations of 210Po and 210Pb in seals were determined in muscle, liver, kidney and spleen. The results of 210Po and 210Pb activity concentrations and the ratio of 210Po / 210Pb in these samples are presented. (Summary-only contribution)
CLASSIFICATION CODE: *S54 Environmental sciences
CONTROLLED TERM: PINNIPEDS; BALTIC SEA; LAKES; POLONIUM 210; LEAD 210; RADIOECOLOGICAL CONCENTRATION; MUSCLES; LIVER; SPLEEN; KIDNEYS
BROADER TERM: ALPHA DECAY RADIOISOTOPES; ANIMALS; AQUATIC ORGANISMS; BETA DECAY RADIOISOTOPES; BETA-MINUS DECAY RADIOISOTOPES; BODY; DAYS LIVING RADIOISOTOPES; DIGESTIVE SYSTEM; ECOLOGICAL CONCENTRATION; EVEN-EVEN NUCLEI; GLANDS; HEAVY NUCLEI; ISOMERIC TRANSITION ISOTOPES; ISOTOPES; LEAD ISOTOPES; MAMMALS; NANOSECONDS LIVING RADIOISOTOPES; NUCLEI; ORGANS; POLONIUM ISOTOPES; RADIOISOTOPES; SEAS; SURFACE WATERS; VERTEBRATES; YEARS LIVING RADIOISOTOPES
ELEMENT TERM: Po; 210Po; is; Po is; Pb; 210Pb; Pb is; U; 238U; U is; Rn; 222Rn; Rn is

L84 ANSWER 23 OF 31 ENERGY COPYRIGHT 2008 USDOE/IEA-ETDE on STN
ACCESSION NUMBER: 2004(14):81802 ENERGY Full-text
TITLE: Preparation of low level sealed 210Pb source for random pulse generator.
AUTHOR: Mitsugashira, T.; Hara, M. (Tohoku Univ., Institute for Materials Research, Oarai Branch, Oarai, Ibaraki (Japan)); Tsuyuzaki, N. (OPTRANS Corp. (Japan))
NUMBER OF REPORT: KEK-PROC--2003-11
SOURCE: Proceedings of the fourth workshop on environmental radioactivity.
Editor(s): Miura, Taichi
High Energy Accelerator Research Organization, Tsukuba, Ibaraki (Japan)
Nov 2003. p. 263-268 of 384 p. 2 refs., 5 figs., 1 tab. Available from KEK(High Energy Accelerator Research Organization) 1-1 Oho, Tsukuba-shi, Ibaraki-ken, 305-0801 JAPAN.
Conference: 4. workshop on environmental radioactivity, Tsukuba, Ibaraki (Japan), 4 - 6 Mar 2003
DOCUMENT TYPE: Report Article; Conference; Availability Note
COUNTRY: Japan
LANGUAGE: Japanese
FIELD AVAILABILITY: AB
ABSTRACT: We have developed the random pulse generator (RPG) that utilizes alpha-particle detection with pin photodiode (PPD). In order to support an expected large market of RPG, a steady production system of weak (about 100 Bq) alpha sealed source is necessary, and, for such alpha-source, 210Pb-210Po source is the best

candidate on a viewpoint of environmental radioactivity impact. Two methods for such 210Pb-210Po sealed source preparation, namely direct deposition from isopropyl alcohol solution (IPA solution) of 210Pb-210Po nitrate (D-IPA method) and the 210Pb-210Po hydroxides precipitation (PPT method), were experimentally examined. In the former D-IPA method, an aliquot of IPA solution of 210Pb-210Po nitrate was directly dropped in a sealed cap for PPD and dried by heating. Then, a polycarbonate (PC) solution of 1/1 mixture of dichloromethane and dichloroethane was dropped on the source to make a thin (about 0.1 mg/cm2) film for radioactivity sealed. In the PPT method, 210Pb-210Po hydroxide was filtrated on a PC membrane filter (Nuclipore 0.1 mum) and the membrane filter was dissolved in a 1/1 mixture of dichloromethane and dichloroethane. The sealed 210Pb-210Po sources were prepared directly by dropping an aliquot of the solution into the PPD cap followed by its evaporation. The sealed sources thus prepared were subjected to 1m height fall-down test, air blowing test, and water immersion test. It was confirmed that no radioactive contaminants were coming off from the sealed source through these tests. (author)

CLASSIFICATION CODE: *S07 Isotopes and radiation sources

CONTROLLED TERM: ALCOHOLS; ALPHA DETECTION; COMPARATIVE EVALUATIONS; DEPOSITION; FABRICATION; HYDROXIDES; LEAD 210; NITRATES; POLONIUM 210; PRECIPITATION; PULSE GENERATORS; SEALED SOURCES

BROADER TERM: ALPHA DECAY RADIOISOTOPES; BETA DECAY RADIOISOTOPES; BETA-MINUS DECAY RADIOISOTOPES; CHARGED PARTICLE DETECTION; DAYS LIVING RADIOISOTOPES; DETECTION; ELECTRONIC EQUIPMENT; EQUIPMENT; EVALUATION; EVEN-EVEN NUCLEI; FUNCTION GENERATORS; HEAVY NUCLEI; HYDROGEN COMPOUNDS; HYDROXY COMPOUNDS; ISOMERIC TRANSITION ISOTOPES; ISOTOPES; LEAD ISOTOPES; NANOSEC LIVING RADIOISOTOPES; NITROGEN COMPOUNDS; NUCLEI; ORGANIC COMPOUNDS; OXYGEN COMPOUNDS; POLONIUM ISOTOPES; RADIATION DETECTION; RADIATION SOURCES; RADIOISOTOPES; SEPARATION PROCESSES; YEARS LIVING RADIOISOTOPES

ELEMENT TERM: Pb; 210Pb; is; Pb is; Pb*Po; Pb sy 2; sy 2; Po sy 2; Po is; 210Po; 210Pb-210Po; D

L84 ANSWER 24 OF 31 ENERGY COPYRIGHT 2008 USDOE/IEA-ETDE on STN

ACCESSION NUMBER: 1994(14):96992 ENERGY Full-text

TITLE: Evaluation of radionuclide levels and radiological dose in three populations of marine mammals in the eastern Canadian Arctic.

AUTHOR: Macdonald, C.R.; Ewing, L.L.; Wiewel, A.M.; Harris, D.A. (AECL Research, Pinawa, Manitoba (Canada)); Stewart, R.E.A. (Dept. of Fisheries and Oceans, Winnipeg, Manitoba (Canada). Freshwater Inst.)

NUMBER OF REPORT: CONF-931152--

SOURCE: Ecological risk assessment: Lessons learned?. Abstract book.
Anon.
Pensacola, FL: Society of Environmental Toxicology and Chemistry. 1993. p. 254 of 356 p. Society of Environmental Toxicology and Chemistry Office, 1010 North 12th Avenue, Pensacola, FL 32501-3307 (United States).
Conference: 14. annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Houston, TX (United States), 14-18 Nov 1993

DOCUMENT TYPE: Book Article; Conference

COUNTRY: United States

LANGUAGE: English

FIELD AVAILABILITY: AB

ABSTRACT: Radionuclide levels were measured in beluga, walrus and ringed seal populations collected in 1992 to assess radiation dose and changes in dose with age and sex. The authors hypothesized that Arctic marine food chains accumulate high levels of naturally-occurring radionuclides such as polonium-210 and that radiation may pose a stress to animals which also accumulate metals such as cadmium. Liver, kidney, muscle and jawbone were analyzed by gamma spectrometry for cesium-137, cesium-134, lead-210, potassium-40 and radium-226 and fission-derived nuclides. Polonium-210 was analyzed by alpha spec after autodeposition onto a silver disk. Cesium-137 concentrations in muscle in all three populations were low, and ranged from below detection limits to 10 Bq/kg ww. There was no evidence of fission-derived radionuclides such as zinc-65 or cobalt-60. Lead-210 levels ranged from below detection limits in muscle of ringed seal and walrus to a mean of 82.3 Bq/kg ww in walrus bone. Polonium-210 in the three population ranged from 10 to 30 Bq/kg ww in bone and kidney. The major contributor to dose in the animals was polonium-210 because it is an alpha emitter and accumulates to moderate levels in liver and kidney. Radiological dose is approximately 20--30 times higher than background in humans, and is considerably lower than the dose observed in terrestrial food chains in the Arctic CLASSIFICATION CODE: *560162; C2120

CONTROLLED TERM: AQUATIC ORGANISMS; CESIUM 134; CESIUM 137; CONTAMINATION; FOOD CHAINS; LEAD 210; MAMMALS; NATURAL RADIOACTIVITY; POLONIUM 210; POTASSIUM 40; RADIUM 226; SENSITIVITY; TISSUE DISTRIBUTION
*MAMMALS: *SENSITIVITY; *FOOD CHAINS: *CONTAMINATION; *CESIUM 137: *TISSUE DISTRIBUTION; *CESIUM 134: *TISSUE DISTRIBUTION; *LEAD 210: *TISSUE DISTRIBUTION; *POTASSIUM 40: *TISSUE DISTRIBUTION; *RADIUM 226: *TISSUE DISTRIBUTION; *POLONIUM 210: *TISSUE DISTRIBUTION

BROADER TERM: ALKA; ALKALI METAL ISOTOPES; ALKALINE EARTH ISOTOPES; ALPHA DECAY RADIOISOTOPES; ANIMALS; BETA DECAY RADIOISOTOPES; BETA-MINUS DECAY RADIOISOTOPES; BETA-PLUS DECAY RADIOISOTOPES; CARBON 14 DECAY RADIOISOTOPES; CESIUM ISOTOPES; DAYS LIVING RADIOISOTOPES; DISTRIBUTION; ELECTRON CAPTURE RADIOISOTOPES; EVEN-EVEN NUCLEI; HEAVY ION DECAY RADIOISOTOPES; HEAVY NUCLEI; HOURS LIVING RADIOISOTOPES; INTERMEDIATE MASS NUCLEI; INTERNAL CONVERSION RADIOISOTOPES; ISOMERIC TRANSI; ISOMERIC TRANSITION ISOTOPES; ISOTOPES; LEAD ISOTOPES; LIGHT NUCLEI; NANOSEC LIVING RADIOISOTOPES; NUCLEI; ODD-EVEN NUCLEI; ODD-ODD NUCLEI; POLONIUM ISOTOPES; POTASSIUM ISOTOPES; RADIOACTIVITY; RADIOISOTOPES; RADIUM ISOTOPES; VERTEBRATES; YEARS LIVING RADIOISOTOPES

L84 ANSWER 25 OF 31 ENERGY COPYRIGHT 2008 USDOE/IEA-ETDE on STN
ACCESSION NUMBER: 1985(18):134853 ENERGY Full-text
TITLE: Application of dual NaI-CsI(Tl) detectors to the in vivo detection and localization of radon seeds.
AUTHOR: Anon. [United States]
CORPORATE SOURCE: New York Univ., NY (USA). Inst. of Environmental Medicine (4664000)
NUMBER OF REPORT: DOE/EV/04326--6; DE85001413
SOURCE: In vivo measurements of bone-seeking radionuclides. Progress report, 1981-1984.
Cohen, N.
1984. pp. 89-96 Availability: NTIS, PC A06/MF A01; 1.
DOCUMENT TYPE: Report Article
COUNTRY: United States
LANGUAGE: English
DOCUMENT NUMBER: ERA-10:043005

ABSTRACT: Sealed gold capillary tubes containing radon have been used as implants for the treatment of certain tumors and lesions. The short-lived daughters of Rn-222 decay with the 3.82 day half-life of the parent. The seeds are generally left after treatment since it is believed that the residual activity from Pb-210, Bi-210 and Po-210 does not represent a significant radiological hazard to the patient. Some have suggested that chronic low-level irradiation of the implantation site may result in the formation of a tumor. Radon seeds which were implanted more than 20 years ago are now being considered for removal. Three subjects were measured in our whole body counting facility using NaI-CsI(T1) detectors. With the NaI-CsI(T1) detector placed directly over the implantation area, it was possible to observe the K X-rays characteristic of gold which are produced as a result of beta particle interaction with the gold casing. 2 refs., 3 figs., 1 tab. CLASSIFICATION CODE: *560151; C1500

CONTROLLED TERM: *RADIATION SOURCE IMPLANTS: *RADIATION HAZARDS; *RADON 222: *RADIATION SOURCE IMPLANTS; BISMUTH 210; BREMSSTRAHLUNG; DAUGHTER PRODUCTS; GOLD; JAW; LEAD 210; LEGS; MAMMARY GLANDS; NEOPLASMS; RADIOTHERAPY; SOLID SCINTILLATION DETECTORS; WHOLE-BODY COUNTERS; X RADIATION

BROADER TERM: ALPHA DECAY RADIOISOTOPES; BETA DECAY RADIOISOTOPES; BETA-MINUS DECAY RADIOISOTOPES; BISMUTH ISOTOPES; BODY; BODY AREAS; DAYS LIVING RADIOISOTOPES; DISEASES; ELECTROMAGNETIC RADIATION; ELEMENTS; EVEN-EVEN NUCLEI; GLANDS; HAZARDS; HEALTH HAZARDS; HEAVY NUCLEI; IMPLANTS; IONIZING RADIATIONS; ISOTOPES; LEAD ISOTOPES; LIMBS; MEASURING INSTRUMENTS; MEDICINE; METALS; NUCLEAR MEDICINE; NUCLEI; ODD-ODD NUCLEI; ORGANS; RADIATION DETECTORS; RADIATION SOURCES; RADIATIONS; RADIOISOTOPES; RADIOLOGY; RADON ISOTOPES; SCINTILLATION COUNTERS; SKELETON; SKULL; THERAPY; TRANSITION ELEMENTS; YEARS LIVING RADIOISOTOPES

ELEMENT TERM: Cs*I*Na*T; Cs sy 4; sy 4; I sy 4; Na sy 4; T sy 4; NaI; Na cp; cp; I cp; CsI(T; Cs cp; T cp; NaI-CsI(T; Rn; Pb; Bi; Po; K

L84 ANSWER 26 OF 31 ENERGY COPYRIGHT 2008 USDOE/IEA-ETDE on STN

ACCESSION NUMBER: 1983(10):83361 ENERGY Full-text

TITLE: Field method for detecting deposits containing uranium and thorium. (Patent.)

AUTHOR: Stieff, L.R. [United States]

PATENT INFORMATION: US 4336451 22 Jun 1982
v p. PAT-APPL-106424.

APPLICATION INFORMATION: 21 Dec 1979

DOCUMENT TYPE: Patent

COUNTRY: United States

LANGUAGE: English

ABSTRACT: Locations of buried deposits are determined by detecting the presence of 2exclamation4PB, 214BI, 214PO, 210BP, 210BI and 210PO in solutions obtained by chemically leaching these elements from rocks and soil. Polonium from the solution is plated on silver foil planchets. Alpha sensitive films are exposed to the alpha decay of 214PO and 210PO by contacting the films with the planchets. The films, when etched, reveal the damage caused by the passage of the high energy alpha particles. Alpha damage as a function of sample size, volume of solution used, planchet, foil or film area and exposure times measures concentration of 214PO and 210PO in the sample. Anomalus concentrations suggest presence of buried deposits containing uranium. Similar anomalus

concentrations of alpha damage from 212BI and 212PO formed in films exposed to foils or planchets plated from leached solutions containing 212PB, 212BI and 212PO suggest deposits containing thorium. Plotting normalized alpha damage population (Numbers of alpha per gram, per square mm., per hour) and sample locations suggest mineral deposit locations.

INT. PATENT CLASSIF.: G01V005-00
CLASSIFICATION CODE: *050200; 050100; B3100
CONTROLLED TERM: *URANIUM DEPOSITS: *GEOPHYSICAL SURVEYS; ALPHA DETECTION; BISMUTH 210; BISMUTH 214; LEACHATES; LEAD 210; LEAD 214; POLONIUM 210; POLONIUM 214; QUANTITY RATIO; THORIUM
BROADER TERM: ACTINIDES; ALPHA DECAY RADIOISOTOPES; BETA DECAY RADIOISOTOPES; BETA-MINUS DECAY RADIOISOTOPES; BISMUTH ISOTOPES; CHARGED PARTICLE DETECTION; DAYS LIVING RADIOISOTOPES; DETECTION; DISPERSIONS; ELEMENTS; EVEN-EVEN NUCLEI; GEOLOGIC DEPOSITS; HEAVY NUCLEI; ISOTOPES; LEAD ISOTOPES; METALS; MICROSEC LIVING RADIOISOTOPES; MINERAL RESOURCES; MINUTES LIVING RADIOISOTOPES; MIXTURES; NUCLEI; ODD-ODD NUCLEI; POLONIUM ISOTOPES; RADIATION DETECTION; RADIOISOTOPES; RESOURCES; SECONDS LIVING RADIOISOTOPES; SOLUTIONS; SURVEYS; YEARS LIVING RADIOISOTOPES
ELEMENT TERM: B*I; BI; 214BI; is; B is; 214B; B cp; cp; I cp; O*P; PO; 214PO; P is; 214P; P cp; O cp; B*P; BP; 210BP; 210B; 210BI; 210PO; 210P; 212BI; 212B; 212PO; 212P

L84 ANSWER 27 OF 31 ENERGY COPYRIGHT 2008 USDOE/IEA-ETDE on STN
ACCESSION NUMBER: 1982(11):85211 ENERGY
TITLE: Airborne radiological sampling of Mount St. Helens plumes.
AUTHOR: Andrews, V.E. [United States]
CORPORATE SOURCE: Office of Radiation Programs, Las Vegas, NV (USA) (9511167)
NUMBER OF REPORT: PB--81-213795
Apr 1981. 20 p. Availability: NTIS, PC A02/MF A01.
DOCUMENT TYPE: Report
COUNTRY: United States
LANGUAGE: English
DOCUMENT NUMBER: ERA-07:034689
ABSTRACT: Particulate and gaseous samples for radiologial analyses were collected from the plumes created by eruptions of Mount St. Helens. The sampling aircraft and equipment used are routinely employed in aerial radiological surveillance at the Nevada Test Site by the Environmental Protection Agency's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada. An initial sample set was collected on April 4, 1980, during the period of recurring minor eruptions. Samples were collected again on May 19 and 20 following the major eruption of May 18. The Environmental Protection Agency's Office of Radiation Programs analyzed the samples for uranium and thorium isotopes, radium-226, lead-210, polonium-210, and radon-222. Other laboratories analyzed samples to determine particle size distribution and elemental composition. The only samples containing radioactivity above normal ambient levels were collected on May 20. Polonium-210 concentrations in the plume, determined from a sample collected between 5 and 30 km from the crater, were approximately an order of magnitude above background. Radon-222 concentrations in samples collected from the plume centerline at a distance of 15 km averaged approximately four times the average surface concentrations. The small increases in radioactivity would cause no observable adverse health effects.
CLASSIFICATION CODE: *500300; 510301
CONTROLLED TERM: *LAVA: *CHEMICAL COMPOSITION; *VOLCANIC GASES:

*CHEMICAL COMPOSITION; *MT ST HELENS: *LAVA; *MT ST HELENS: *RADIATION MONITORING; *LAVA: *RADIATION MONITORING; *VOLCANIC GASES: *RADIATION MONITORING; *MT ST HELENS: *VOLCANIC GASES; AERIAL SURVEYING; AIR POLLUTION; DISTRIBUTION; LEAD; LEAD 210; PARTICLE SIZE; PLUMES; POLONIUM; POLONIUM 210; RADIOACTIVE AEROSOLS; RADIOACTIVE MATERIALS; RADIOACTIVITY; RADIUM; RADIUM 226; RADON; RADON 222; SAMPLING; THORIUM ISOTOPES; URANIUM ISOTOPES

BROADER TERM: ACTINIDE ISOTOPES; AEROSOLS; ALKALINE EARTH ISOTOPES; ALKALINE EARTH METALS; ALPHA DECAY RADIOISOTOPES; BETA DECAY RADIOISOTOPES; BETA-MINUS DECAY RADIOISOTOPES; COLLOIDS; DAYS LIVING RADIOISOTOPES; DISPERSIONS; ELEMENTS; EVEN-EVEN NUCLEI; FLUIDS; GASES; HEAVY NUCLEI; ISOTOPES; LEAD ISOTOPES; MATERIALS; METALS; MONITORING; MOUNTAINS; NONMETALS; NUCLEI; POLLUTION; POLONIUM ISOTOPES; RADIOISOTOPES; RADIUM ISOTOPES; RADON ISOTOPES; RARE GASES; SIZE; SOLS; YEARS LIVING RADIOISOTOPES

L84 ANSWER 28 OF 31 ENERGY COPYRIGHT 2008 USDOE/IEA-ETDE on STN

ACCESSION NUMBER: 1983(1):7074 ENERGY Full-text

TITLE: Focusing chromatography using a dilute precipitation reagent. Separation of 226Ra decayed nuclides by potassium fluoride.

AUTHOR: Furushima, K.; Shinagawa, M. (Kinki Univ., Higashi-Osaka, Osaka (Japan). Faculty of Science and Technology) [Japan]

SOURCE: Radioisotopes (Tokyo) (Jun 1981) v. 30(6) p. 299-304 CODEN: RAISAB ISSN: 0033-8303

DOCUMENT TYPE: Journal

COUNTRY: Japan

LANGUAGE: Japanese

ABSTRACT: The electrophoresis of 226Ra and it's decayed nuclides was carried out by using hydrochloric acid in the positive electrode cell and aqueous solution of potassium fluoride in the negative electrode cell. Experimental factors, i.e. concentrations of potassium fluoride and hydrochloric acid, intensity of electric field, duration for electrophoresis and pH value of the potassium fluoride solution etc. were examined. The sample solution was of 0.01 M hydrochloric acid with a tracer amount of 226Ra and 210Pb. Each of these nuclides was carrier free and was 4GBq/l(1muCi/ml) in concentration. For the sake of autoradiography, a photoengraving film (Fujilith Ortho Film, TAC = 135) was made use of examining the locations of the separated radioactive bands obtained on the paper strip. Their beta and gamma radioactivities were detected as the film darkening on developing the film. According to the positions thus detected, the strip filter paper was cut into pieces and the species of radionuclides were determined by the measurements of energies and half-lives on beta and gamma rays. The locations of the separated alpha-radionuclides were decided by etching the surface of it's film with 6 M aqueous solution of sodium hydroxide and the species of radionuclides were determined by the solid state alpha-track detection method. As the result, the optimum conditions for the separation are to use 0.01 M hydrochloric acid in the positive CLASSIFICATION CODE: *400703; B1300

CONTROLLED TERM: *RADIUM 226: *CHROMATOGRAPHY; AUTORADIOGRAPHY; DAUGHTER PRODUCTS; HYDROCHLORIC ACID; LEAD 210; PH VALUE; POTASSIUM FLUORIDES; PRECIPITATION; QUANTITY RATIO; ELECTROPHORESIS; AQUEOUS SOLUTIONS; ELECTRODES; BISMUTH 210; POLONIUM 210; LEAD 214

ELEMENT TERM: Ra; 226Ra; is; Ra is; Pb; 210Pb; Pb is

L84 ANSWER 29 OF 31 EMBASE COPYRIGHT (c) 2008 Elsevier B.V. All rights

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ACCESSION NUMBER: 1997217207 EMBASE Full-text
TITLE: Retrospective assessment of radon exposure by measurements of (210)Po implanted in surfaces using an alpha track detector technique.
AUTHOR: Falk, R. (correspondence); Mellander, H.; Nyblom, L.; Ostergren, I.
CORPORATE SOURCE: Swed. Radiation Protection Institute, S-171 16 Stockholm, Sweden.
AUTHOR: Falk, R. (correspondence)
CORPORATE SOURCE: Swedish Radiation Protection Inst., S-171 16 Stockholm, Sweden.
SOURCE: Environment International, (1997) Vol. 22, No. SUPPL. 1, pp. S857-S861.
Refs: 4
ISSN: 0160-4120 CODEN: ENVIDV
PUBLISHER IDENT.: S 0160-4120(96)00193-6
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Conference Article; (Conference paper)
FILE SEGMENT: 046 Environmental Health and Pollution Control
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 22 Aug 1997
Last Updated on STN: 22 Aug 1997

ABSTRACT: The radon exposure of the past is important in epidemiological studies where an assessment of lung cancer risk from indoor ***radon*** exposure is evaluated. The long-lived decay product, (***210***)Pb (T 1/4 = 22 y), is implanted into indoor surfaces by alpha recoils and can be monitored to give information about the previous ***radon*** history. This gives an alternative or complementary method to the traditional measurements of the current average radon concentration. Autoradiographic alpha-track methods to assess the (210)Pb activity implanted in glass surfaces by measurement of (***210***)Po alpha activity were investigated to find a simple and reliable method for field use. One limiting factor at low exposure levels is the alpha background activity in the sub-surface material. In the search for a practical field method, the use of two different alpha-track detector materials was found successful. By exposing one Kodak LR-115 cellulose-nitrate ***film*** and one CR- 39 detector side by side on glass panes, the background of the glass is measured with the LR-115 and both the background and the signal by the CR-39 detector. Results from measurements in 31 dwellings show that an exposure of more than 1000 Bq.ovrhdot.y.ovrhdot.m(-3) to a glass surface can be measured with the (CR- LR) difference technique. Experiences from the field measurements show the method to be accurate, simple, and reliable and therefore a promising tool for future radon epidemiological studies.

CONTROLLED TERM: Medical Descriptors:
alpha radiation
autoradiography
*cancer risk
conference paper
*environmental exposure
priority journal
reliability
retrospective study
CONTROLLED TERM: Drug Descriptors:
*radon
CAS REGISTRY NO.: (radon) 10043-92-2

L84 ANSWER 30 OF 31 COMPENDEX COPYRIGHT 2008 EEI on STN
ACCESSION NUMBER: 1984(11):201224 COMPENDEX Full-text
DOCUMENT NUMBER: 8411121412
; *8491369
TITLE: STUDY OF 210Pb AND 210Po DISTRIBUTIONS IN ENVIRONMENTAL SAMPLES BY CR-39 TRACK DETECTOR.
AUTHOR: Hunyadi, I. (Hungarian Acad of Sciences, Inst of Nuclear Research, Debrecen, Hung); Somogyi, G.; Szilagyi, S.
SOURCE: Nucl Tracks Radiat Meas v 8 n 1-4 1984, Solid State Nucl Track Detect, Proc of the Int Conf, 12th, Acapulco, Mex, Sep 4-10 1983 p 491-495
SOURCE: Nucl Tracks Radiat Meas v 8 n 1-4 1984, Solid State Nucl Track Detect, Proc of the Int Conf, 12th, Acapulco, Mex, Sep 4-10 1983 p 491-495
CODEN: NUTRDQ ISSN: 0191-278X
PUBLICATION YEAR: 1983
LANGUAGE: English
ABSTRACT: Activity concentration distributions of long-lived alpha-emitters in aerosol samples are analyzed by high-resolution autoradiography in CR-39.A study of the alpha-activity attached to aerosols of different particulate sizes separated by a cascade impactor is also performed.It is found that, in the majority of samples, the alpha-activity can be dominantly related to the presence of Po-210 produced by its beta-active precursor Pb-210 .Analysis of alpha-decay properties was done by autoradiographs taken at different post-sampling times.Spectroscopic studies of individual alpha tracks and track clusters were developed for high resolution alpha energy determination.Measured parameters were the major axis of surface track opening, the diameter of etched out track end, the total length measurable on the surface along the projected track, and the thickness of the layer etched away from the detector surface.5 refs. CLASSIFICATION CODE: 944 Moisture, Pressure & Temperature, & Radiation Measuring Instruments; 443 Meteorology; 622 Radioactive Materials; 815 Plastics & Polymeric Materials; 932 High Energy, Nuclear & Plasma Physics
CONTROLLED TERM: *PARTICLE DETECTORS:Applications; ATMOSPHERIC RADIOACTIVITY:Analysis; POLYCARBONATES
SUPPLEMENTARY TERM: CR-39; AUTORADIOGRAPHY; ENVIRONMENTAL ALPHA ACTIVITY; SSNTD; SOLID STATE NUCLEAR TRACK DETECTORS
ELEMENT TERM: Po; Pb; 210Pb; is; Pb is; 210Po; Po is

L84 ANSWER 31 OF 31 SCISEARCH COPYRIGHT(c)2008 The Thomson Corporation on STN
ACCESSION NUMBER: 1994:283522 SCISEARCH Full-text
THE GENUINE ARTICLE: NJ812
TITLE: AN EFFICIENT QUANTITATIVE TECHNIQUE FOR THE SIMULTANEOUS ANALYSES OF RADON DAUGHTERS PB-210, BI-210 AND PO-210
AUTHOR: CHURCH T M (Reprint); HUSSAIN N; FERDELMAN T G; FOWLER S W
CORPORATE SOURCE: UNIV DELAWARE, COLL MARINE STUDIES, NEWARK, DE 19716 (Reprint); IAEA, ENVIRONM LAB, MONACO 98012, MONACO
COUNTRY OF AUTHOR: USA; MONACO
SOURCE: TALANTA, (FEB 1994) Vol. 41, No. 2, pp. 243-249. ISSN: 0039-9140.
PUBLISHER: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: PHYS
LANGUAGE: English
REFERENCE COUNT: 29
ENTRY DATE: Entered STN: 1994

Last Updated on STN: 1994

ABSTRACT:

An improved and time efficient technique has been developed for quantitative determination of the long-lived Rn-222 daughters (Pb-210, ***Po*** -210 and Bi-209) in atmospheric and oceanic samples. The sample is first spiked with yield tracers for polonium (208 or 209), bismuth (207), and lead (stable lead carrier). These nuclides may then be scavenged through iron hydroxide precipitation and redissolved in a dilute (pH approximately 2) nitric acid plating medium with citrate and hydroxylamine hydrochloride at 90-degrees centrigrade with constant stirring. First a silver planchet is suspended in the solution which plates polonium to high efficiency. Second, a nickel planchet is suspended in the same solution which is maintained hermetic (e.g. bubbling with helium) and bismuth is plated next with high efficiency. Third, lead is purified from the same solution using anion exchange techniques and isolated for beta counting as the sulfate. Polonium is analyzed by isotope dilution alpha spectrometry. Bismuth and lead are analyzed by anti-coincident beta counting in a low level shield. In the case of bismuth, the 207 tracer is added in quantities at least comparable to the background of the beta system such that counting before and after the decay of 2 Bi-210 gives the bismuth yield.

The unique characteristics of this technique are its speed and efficiency; all three radon daughters can be isolated for counting within 4 hr of pre-treating the sample. The remaining solution can be treated subsequently for other analyses as appropriate.

CATEGORY: CHEMISTRY, ANALYTICAL

SUPPL. TERM PLUS: GROUNDWATERS; SEPARATION; POLONIUM

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
ANON	1984		170	EXPT NUCLEAR SCI
ANDREWS, J N	1989	53	1791	GEOCHIM COSMOCHIM AC
BAGNALL, K W	1957		95	CHEM RARE RADIOELEME
BLACK, S C	1961	7	87	HLTH PHYS
BLANCHARD, R L	1966	38	189	ANAL CHEM
CURIE, M	1910	150	386	CR HEBD ACAD SCI
GOLDBERG, E D	1962	26	417	GEOCHIM COSMOCHIM AC
GOLDBERG, E D	1974	5	489	SEA
HARADA, K	1989	53	143	GEOCHIM COSMOCHIM AC
HELKAMP, R W	1979	30	237	INT J APPL RADIAT IS
HUSSAIN, N	1982	58	430	EARTH PLANET SC LETT
HUSSAIN, N	1980	44	1287	GEOCHIM COSMOCHIM AC
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JUNGE, C E	1963		139	AIR CHEM RADIOACTIVI
KHARKAR, D P	1966	30	621	GEOCHIM COSMOCHIM AC
KRISHNASWAMI, S	1976	83	143	ANAL CHIM ACTA
KRISHNASWAMI, S	1982	18	1663	WATER RESOUR RES
LAL, D	1960	31	305	REV SCI INSTRUM
LAMBERT, G	1965	206	1343	NATURE
MACKENZIE, A B	1979	104	1151	ANALYST
MARCKWALD, W	1905	38	591	BER
MOORE, H E	1973	78	7065	J GEOPHYS RES
NARITA, H	1989	36	925	TALANTA
OSMOND, J K	1982			URANIUM SERIES DISEQ
POET, S E	1972	77	6515	J GEOPHYS RES
ROBBINS, J A	1975	39	285	GEOCHIM COSMOCHIM AC
TUREKIAN, K K	1977	5	227	ANNU REV EARTH PL SC
VONOETTINGEN, W F	1930	10	221	PHYSIOL REV

FILE 'HOME' ENTERED AT 14:09:55 ON 31 JUL 2008

SEARCH HISTORY

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=> d his nofile

     (FILE 'HOME' ENTERED AT 13:24:53 ON 31 JUL 2008)

     FILE 'CAPLUS' ENTERED AT 13:25:06 ON 31 JUL 2008
                E US2007-560922/APPS
                E US2005-560922/APPS
L1              1 SEA ABB=ON  US2005-560922/AP
                D SCAN

     FILE 'REGISTRY' ENTERED AT 13:26:01 ON 31 JUL 2008
L2              1 SEA ABB=ON  13981-52-7
L3              1 SEA ABB=ON  14255-04-0
                D SCAN

     FILE 'REGISTRY' ENTERED AT 13:26:55 ON 31 JUL 2008
                D IDE L2
                D IDE L3

     FILE 'CAPLUS' ENTERED AT 13:27:14 ON 31 JUL 2008
L4           3024 SEA ABB=ON  L2
L5           4376 SEA ABB=ON  L3
L6           1219 SEA ABB=ON  L4 AND L5
L7             28 SEA ABB=ON  L2/P AND L3/P
                E RADIATION SOURCES+ALL/CT
L8           2364 SEA ABB=ON  RADIATION SOURCES/CT
L9              4 SEA ABB=ON  L6 AND L8
                D SCAN TI
L10         903425 SEA ABB=ON  A/OBI
L11            118 SEA ABB=ON  L10 AND L6
L12           6038 SEA ABB=ON  L10(L)(SOURCE#/OBI OR EMIT?/OBI)
L13             28 SEA ABB=ON  L12 AND L6
L14              1 SEA ABB=ON  L12 AND L7
                D SCAN
L15         258343 SEA ABB=ON  SEAL?/BI
L16              2 SEA ABB=ON  (L13 OR L7) AND L15
                D SCAN TI
L17         881850 SEA ABB=ON  FILM#/OBI
L18          76855 SEA ABB=ON  POLYCARBONATE#/BI
L19         353488 SEA ABB=ON  HYDROXIDE#/BI

     FILE 'REGISTRY' ENTERED AT 13:32:37 ON 31 JUL 2008
                E RADON/CN
L20           248 SEA ABB=ON  RADON?/CN

     FILE 'CAPLUS' ENTERED AT 13:32:52 ON 31 JUL 2008
L21          25986 SEA ABB=ON  L20
L22            264 SEA ABB=ON  L6 AND L21
L23             15 SEA ABB=ON  (L7 OR L13) AND L21
                D SCAN L1
L24         584884 SEA ABB=ON  71/SC,SX
L25              6 SEA ABB=ON  L7 AND L21
L26              4 SEA ABB=ON  L13 AND L21 AND L24
L27              0 SEA ABB=ON  (L13 OR L7) AND L17
L28              3 SEA ABB=ON  (L13 OR L7) AND L18
L29              2 SEA ABB=ON  (L13 OR L7) AND L19
L30              3 SEA ABB=ON  (L13 OR L7) AND (L17 OR L18 OR L19)
                D AB L1
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L31     1420531 SEA ABB=ON  FILM#/BI
L32           4 SEA ABB=ON  (L13 OR L7) AND (L18 OR L19 OR L31)
L33           5 SEA ABB=ON  L4(L)PUR/RL
L34           5 SEA ABB=ON  L5(L)PUR/RL
L35           2 SEA ABB=ON  L33 AND L34
                D SCAN TI L33

     INDEX '1MOBILITY, 2MOBILITY, ABI-INFORM, ADISCTI, AEROSPACE, AGRICOLA,
     ALUMINIUM, ANABSTR, ANTE, APOLLIT, AQUALINE, AQUASCI, AQUIRE, BABS,
     BIBLIODATA, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA,
     CAOLD, CAPLUS, CASREACT, CBNB, CEABA-VTB, CERAB, ...' ENTERED AT 13:38:56
     ON 31 JUL 2008
                SEA (POLONIUM OR PO OR LEAD OR PB)(A)210 OR PB210 OR 210PB OR 2
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              29   FILE ABI-INFORM
             348   FILE AEROSPACE
             120   FILE AGRICOLA
              23   FILE ALUMINIUM
             320   FILE ANABSTR
              18   FILE ANTE
             530   FILE AQUALINE
            2100   FILE AQUASCI
             133   FILE AQUIRE
             100   FILE BABS
              27   FILE BIBLIODATA
              25   FILE BIOENG
            2400   FILE BIOSIS
               4   FILE BIOTECHABS
               4   FILE BIOTECHDS
              50   FILE BIOTECHNO
             692   FILE CABA
             214   FILE CAOLD
            5192   FILE CAPLUS
               1   FILE CASREACT
              20   FILE CEABA-VTB
               2   FILE CERAB
              11   FILE CIN
             288   FILE CIVILENG
             977   FILE COMPENDEX
               6   FILE COMPUAB
             159   FILE CONFSCI
               2   FILE COPPERLIT
               7   FILE CORROSION
              12   FILE CROPU
              14   FILE CSNB
              31   FILE DDFB
               9   FILE DDFU
             250   FILE DISSABS
              31   FILE DRUGB
              11   FILE DRUGU
              17   FILE ELCOM
               7   FILE EMA
              18   FILE EMBAL
            1570   FILE EMBASE
              64   FILE ENCOMPLIT
               4   FILE ENCOMPPAT
            5527   FILE ENERGY
             380   FILE ENVIROENG
             125   FILE EPFULL
             207   FILE ESBIOBASE
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            3   FILE FRANCEPAT
           22   FILE FRFULL
           12   FILE FROSTI
           24   FILE FSTA
           39   FILE GBFULL
           52   FILE GENBANK
         3560   FILE GEOREF
          144   FILE HEALSAFE
           95   FILE IFIPAT
         5384   FILE INIS
           84   FILE INPADOCDB
           62   FILE INPAFAMDB
         1831   FILE INSPEC
          147   FILE INSPHYS
            1   FILE IPA
            3   FILE ITRD
           13   FILE JAPIO
           10   FILE KOREAPAT
          425   FILE LIFESCI
            2   FILE MATBUS
          148   FILE MECHENG
          925   FILE MEDLINE
          118   FILE METADEX
            1   FILE NAPRALERT
           43   FILE NLDB
          941   FILE NTIS
          756   FILE OCEAN
            3   FILE PAPERCHEM2
         1618   FILE PASCAL
            4   FILE PATDPA
           30   FILE PATDPAFULL
            9   FILE PCI
          236   FILE PCTFULL
            1   FILE PHIN
            4   FILE PIRA
         1001   FILE POLLUAB
           76   FILE PROMT
            2   FILE RAPRA
            3   FILE RSWB
            2   FILE RUSSIAPAT
         3578   FILE SCISEARCH
           38   FILE SOLIDSTATE
            1   FILE SOLIS
           55   FILE TEMA
         4517   FILE TOXCENTER
            1   FILE TRIBO
          102   FILE TULSA
           22   FILE TULSA2
           46   FILE UFORDAT
          117   FILE ULIDAT
         1110   FILE USPATFULL
          333   FILE USPATOLD
          145   FILE USPAT2
         1271   FILE WATER
          124   FILE WPIDS
          124   FILE WPINDEX
            7   FILE WSCA
L36             QUE ABB=ON  (POLONIUM OR PO OR LEAD OR PB)(A) 210 OR PB210 OR
                210PB OR 210PO OR PO210
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               D RANK

     FILE 'STNGUIDE' ENTERED AT 13:40:57 ON 31 JUL 2008

     FILE 'PASCAL, BIOSIS, GEOREF, ENERGY, DISSABS, CONFSCI, INSPEC, EMBASE,
     COMPENDEX, SCISEARCH' ENTERED AT 13:51:54 ON 31 JUL 2008
L37         7713 SEA ABB=ON  (POLONIUM OR PO)(A) 210 OR 210PO OR PO210
L38        17263 SEA ABB=ON  (LEAD OR PB)(A) 210 OR 210PB OR PB210
L39      2217612 SEA ABB=ON  FILM#
L40        68820 SEA ABB=ON  RADON OR 222RADON OR RADON222
L41        98370 SEA ABB=ON  ALPHA(2A)(SOURCE OR EMIT? OR PARTICLE#)
L42        47252 SEA ABB=ON  POLYCARBONATE# OR POLY CARBONATE#
L43       190082 SEA ABB=ON  HYDROXIDE#
L44       226644 SEA ABB=ON  SEAL?
L45          898 SEA ABB=ON  L37 AND L38 AND (L39 OR L40 OR L41 OR L42 OR L43
                 OR L44)
L46           14 SEA ABB=ON  L37 AND L38 AND L39
L47          694 SEA ABB=ON  L37 AND L38 AND L40
L48          252 SEA ABB=ON  L37 AND L38 AND L41
L49            2 SEA ABB=ON  L37 AND L38 AND L42
L50           24 SEA ABB=ON  L37 AND L38 AND L43
L51           21 SEA ABB=ON  L37 AND L38 AND L44
L52           57 SEA ABB=ON  L37 AND L38 AND (L39 OR L42 OR L43 OR L44)
L53           35 DUP REM L52 (22 DUPLICATES REMOVED)
                      ANSWER '1' FROM FILE PASCAL
                      ANSWERS '2-11' FROM FILE BIOSIS
                      ANSWERS '12-29' FROM FILE ENERGY
                      ANSWERS '30-31' FROM FILE EMBASE
                      ANSWERS '32-34' FROM FILE COMPENDEX
                      ANSWER '35' FROM FILE SCISEARCH
L54            9 SEA ABB=ON  L37 AND L38 AND L39 AND ((L40 OR L41 OR L43 OR
                 L44))
L55           94 SEA ABB=ON  L37 AND L38 AND L40 AND ((L41 OR L43 OR L44))
L56            6 SEA ABB=ON  L37 AND L38 AND L43 AND ((L40 OR L41 OR L44))
L57            4 SEA ABB=ON  L37 AND L38 AND L44 AND ((L40 OR L41))
L58         2389 SEA ABB=ON  L37(2A) L38
L59          501 SEA ABB=ON  L58 AND (L40 OR L41)
L60           36 SEA ABB=ON  L58 AND L40 AND L41
L61          907 SEA ABB=ON  L40(5A) COLLECT?
L62            0 SEA ABB=ON  L58 AND L61 AND L41
L63            1 SEA ABB=ON  L58 AND L61
                 D SCAN
L64           29 DUP REM L60 (7 DUPLICATES REMOVED)
                      ANSWER '1' FROM FILE PASCAL
                      ANSWER '2' FROM FILE BIOSIS
                      ANSWERS '3-18' FROM FILE ENERGY
                      ANSWERS '19-26' FROM FILE INSPEC
                      ANSWER '27' FROM FILE EMBASE
                      ANSWERS '28-29' FROM FILE SCISEARCH
L65           36 SEA ABB=ON  L60 NOT (L49 OR L54 OR L56 OR L57 OR L63)
                 D SCAN L64
L66         1616 SEA ABB=ON  RANDOM PULS?
L67            3 SEA ABB=ON  L60 AND L66
                 D QUE
L68            5 SEA ABB=ON  L58 AND (L40 OR L41) AND L66

     FILE 'WPIX' ENTERED AT 14:02:25 ON 31 JUL 2008
L69            1 SEA ABB=ON  MITSUGASHIRA H?/AU
                 D SCAN
                 D TRIAL
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                E K08-A+ALL/MC
L70          68 SEA ABB=ON  (POLONIUM/BI,ABEX OR PO/BI,ABEX)(A)210/BI,ABEX OR
                210PO/BI,ABEX OR PO210/BI,ABEX OR POLONIUM210/BI,ABEX OR
                210POLONIUM/BI,ABEX
L71          68 SEA ABB=ON  (LEAD/BI,ABEX OR PB/BI,ABEX)(A)210/BI,ABEX OR
                210PB/BI,ABEX OR PB210/BI,ABEX OR 210LEAD/BI,ABEX OR LEAD210/BI
                ,ABEX
L72          11 SEA ABB=ON  L70 AND L71
                D SCAN
L73      974355 SEA ABB=ON  FILM#/BI,ABEX
L74      209521 SEA ABB=ON  ALPHA/BI,ABEX
L75       66573 SEA ABB=ON  POLYCARBONATE#/BI,ABEX OR POLY CARBONATE#/BI,ABEX
L76      146392 SEA ABB=ON  HYDROXIDE#/BI,ABEX
L77      722352 SEA ABB=ON  SEAL?/BI,ABEX
L78        1259 SEA ABB=ON  RANDOM PULS?/BI,ABEX
L79           9 SEA ABB=ON  L70 AND L71 AND (L73 OR L74 OR L75 OR L76 OR L77
                OR L78)
L80        2652 SEA ABB=ON  ALPHA/BI,ABEX(2A)(SOURCE/BI,ABEX OR EMIT?/BI,ABEX
                OR PARTICLE#/BI,ABEX)
L81           4 SEA ABB=ON  L70 AND L71 AND (L73 OR L75 OR L76 OR L77 OR L78
                OR L80)

     FILE 'STNGUIDE' ENTERED AT 14:07:22 ON 31 JUL 2008
     FILE 'CAPLUS' ENTERED AT 14:09:11 ON 31 JUL 2008
                D QUE L9
                D QUE L16
                D QUE L25
                D QUE L26
                D QUE L32
                D QUE L35
L82          14 SEA ABB=ON  (L9 OR L16 OR L25 OR L26 OR L32 OR L35)

     FILE 'WPIX' ENTERED AT 14:09:14 ON 31 JUL 2008
                D QUE L81

     FILE 'PASCAL, BIOSIS, GEOREF, ENERGY, DISSABS, CONFSCI, INSPEC, EMBASE,
     COMPENDEX, SCISEARCH' ENTERED AT 14:09:14 ON 31 JUL 2008
                D QUE L49
                D QUE L54
                D QUE L56
                D QUE L57
                D QUE L63
                D QUE L68
L83          23 SEA ABB=ON  (L49 OR L54 OR L56 OR L57 OR L63 OR L68)

     FILE 'CAPLUS, WPIX, BIOSIS, ENERGY, INSPEC, EMBASE, COMPENDEX, SCISEARCH'
     ENTERED AT 14:09:22 ON 31 JUL 2008
L84          31 DUP REM L82 L81 L83 (10 DUPLICATES REMOVED)
                     ANSWERS '1-14' FROM FILE CAPLUS
                     ANSWERS '15-16' FROM FILE WPIX
                     ANSWERS '17-20' FROM FILE BIOSIS
                     ANSWERS '21-28' FROM FILE ENERGY
                     ANSWER '29' FROM FILE EMBASE
                     ANSWER '30' FROM FILE COMPENDEX
                     ANSWER '31' FROM FILE SCISEARCH
                D IBIB AB HITIND 1-14
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